NORTH AMERICA'S # 1 KILLER
HEART DISEASE

HOW TO USE BREAK-THROUGH NUTRIENTS To:

PREVENT AND REVERSE HEART DISEASE.

By Dr. Robert Preston, N.D.

CHAPTER ONE NO MORE HEART ATTACKS

Great News! This book will show you how to easily, rapidly and inexpensively:

- ***Totally prevent a heart attack!***
- ***Never have another heart attack!***
- ***Eliminate Coronary Artery Disease!***
- ***Get rid of arteriosclerosis forever!***

A Revolutionary Scientific Breakthrough Now Makes This Possible.. Tomorrow's Medical Standard For Heart Disease – Today!

As shocking and revolutionary as it is now, what you are about to learn today about the simple cause and cure of Coronary Artery Disease will become tomorrow's common accepted scientific wisdom on the subject. It will become the "new" medical standard for the prevention and cure of heart disease. Twenty years from now, heart disease will be no more common in the United States than is scurvy, beriberi, rickets or pellagra. However, before that time comes, there is going to be an enormous war fought by many of the current heart disease "experts" to defend the status quo. It has always been this way when a scientific revolution occurs. Those who have reputations, careers and fortunes built upon, and committed to the old line, will fight to the bitter end to protect them. It has always been this way.

When the great astronomer Copernicus published his findings 500 years ago that the Sun was the center of the solar system, and that the Earth "revolved" around it, instead of the other way around, that gave real meaning to the word scientific "revolution". When Galileo the great scientist endorsed this idea, the Catholic Church placed him under "house arrest" for the rest of his life because he refused to recant his endorsement. It took the Catholic Church over 400 years to apologize and admit they were wrong.

It is recorded in the Bible that a messenger was sent from the **front lines of the battlefield** to inform the king that his army had been defeated. Rather than deal with the reality of the situation, the king ordered that the messenger be put to death. Nothing has changed. As one of the messengers bearing the wonderful liberating news that can free anyone from having a heart attack, I fully expect to be vilified by those whose careers and fortunes are dependent upon keeping the heart disease industry continuing to gobble up billions of the nations dollars each year. In the long march of history, the fate of the messenger does not matter. It does not alter the truth or the end result of the message.

The only thing that matters is that, as you will see later in this book, there is now an ever growing number of scientists whose discoveries world wide prove the message of this book. There is also an ever growing band of authors who are willing to stand up and be counted on, to tell the world about this life saving scientific truth. History has taught us that when the time for a great truth has come to occupy the consciousness of the world, nothing can stop it. Not armies, religions, governments, media, wealth or power. Nothing can block the way of a truth whose time has come. That time has now come for the truth about heart disease.

Why Heart Disease Prevention and Care Has Been Such a Failure!

I know that because of all that you have heard or seen about heart disease in the media, you may find the bold title of this book, and the introductory statements to this chapter hard to believe. After all, the media has been anxious to let you know that the medical experts have left no stone unturned in their difficult struggle against heart disease. Surely if such a major breakthrough had occurred the major media would be the first to let you know. Wouldn't they?

Perhaps you have even personally suffered with heart disease. All of us have at least suffered from this disease through the heart attack of a close family member or friend. You know that if the victim was one of the lucky 40 % who survive their first heart attack, everything possible was done. The disease was fought by wonderful and dedicated doctors with powerful drugs, often times with radical surgery and finally with a new restrictive diet. Yet, you know that in most cases, from that point on, their life has been severely compromised. Many go on to succumb to another attack later. Thus you may find it hard to believe that you can rapidly and easily end heart disease in yourself and your loved ones. However, this book will provide you with rock solid documented scientific proof that you can.

I don't blame you for being skeptical, after all, heart disease has been America's top killer for the past 50 years, and as of this writing it remains so. More than one half million American's die directly from heart attacks every year, and another half million die each year **from other aspects** of heart disease. [2] Each year well over 50 billions of dollars are spent on heart disease. [3] That money is spent on research; cardiac care facilities, physician services, drugs and surgery to treat heart disease.

Yet after 50 years of modem medical research and treatment, heart disease in the United States still results in more deaths each year than from all other causes combined, including accidents and cancer! [4] Worse still, a Valentine's Day 2002 report from the U.S. government's Centers for Disease Control and Prevention revealed that half of all those who have a heart attack will die *before* they can reach a hospital! [5] Women have been frightened into thinking that breast cancer is their greatest danger, but the truth is, *five times* as many women die from heart attacks each year as from breast cancer. [6] In fact, among women, those who have a heart attack have a death rate higher than that of men, and death from Coronary Artery Disease is the leading cause of death in women. [7]

Clearly, even after all the effort that has been spent to focus the publics attention on the prevention and recovery from heart disease through clinics, seminars, TV programs, newspaper and magazine articles, diets, new drugs, heart transplants, artificial hearts, angioplasty and open heart by pass surgery, the results have been very dismal.

Why is this? As this book will show you with dramatic proof, it is simply because medical science has not known what *caused* heart disease. Thus, all the diets and drugs have been focused on the wrong targets.

Expert Dietary Advice Is Not Only Confusing, Its Wrong!

If you have been confused by all of the conflicting claims of what to do, and what not to do, to prevent or treat heart disease, don't feel that you are alone. Even doctors and medical researchers have been confused. First the medical experts told you not to eat eggs, then a few years later they told you it was alright to eat an egg once in awhile, and now they say you can eat all the eggs you want.

Eating eggs isn't the only area of confusion. First you were told that drinking alcohol causes heart disease. Then you were told that drinking wine was actually good for the heart. Next you were told that it wasn't really the alcohol in the wine, it was the natural dark red pigment in the wine that was good for you, and that drinking grape juice would be better for you than wine. Now you are being told that to prevent and relieve heart disease, drinking a little bit of alcohol every day is better for you than none at all.

You have been told that eating fish is good for you, and eating red meat is bad for you. They say that fatty food is bad for you and that saturated fat is not just bad, it is a total disaster. You are told that some kinds of fiber are good for you but others are not. You are told that if you eat fresh fruits, vegetables and lots of grains your chance of heart attack is almost nil. However if you **eat butter or cheese and drink** whole milk, your heart is going to be in real trouble. Drinking tea is okay but coffee will do your heart in.

The French Paradox

However, the people of France violate all the eating rules described above. Their meals are filled with red meat (one of their favorites is fat laden duck liver), cheeses, butter, creamy sauces, rich deserts and plenty of alcohol. Yet they have the lowest heart attack and disease rate for any advanced nation on earth. Why? How can this be? Even the medical experts, who are so free with their advice as to what you should and should not eat, have no idea. That is why they themselves have named this the "French Paradox". [8] The answer, as you will see in this book, is that it is not a paradox. The French diet contains an abundance of is a sudden death heart attack. In almost half those cases, the "experts" have no idea why they had a heart attack.[11]

This means that out of nearly every two people who actually have a heart attack, one will meet the heart protective standards set by the "medical experts". Supposedly they are in perfect health. Yet they just had a heart attack. Something is radically wrong with this picture. What IS wrong, is that the "experts" do not really know what is causing Coronary Artery Disease. Tragically, they are watching the hen house while the fox steals the chickens.

This does not mean that such things as cholesterol and triglyceride levels, blood pressure, physical exercise, blood sugar and body weight do not matter with regard to heart disease. Of course they matter, that is what all the research has shown. What the **research has not shown is that they** are the **cause** of heart attacks and heart disease. Furthermore, not one reputable medical doctor or scientist in the world would make that claim. The following statement is one of the most important things you will ever read with regard to heart disease, and by clearly understanding it, most of the confusion about heart disease you have ever heard, read or seen, will immediately begin to clear.

All the factors listed at the outset of this paragraph aggravate and make existing heart disease worse, but they are of no significant effect until the CAUSE of heart disease has first created the disease within the arteries.

The Short but Tragic History of Heart Disease In America !

Historically speaking, Coronary Artery Disease is a brand new invention of the modern diet. I say invention because it does not occur among any animals or people living on a natural diet. Most people are shocked to learn that doctors were not even aware of heart disease until Dr. George Dock reported the first three cases of coronary thrombosis in 1896. [12] It was not until 1912 that the Journal of the American Medical Association published its first account of heart disease, when Chicago physician Dr. J.B. Herrick discussed six cases of coronary thrombosis. [13] Dr. Paul Dudley White became America's first cardiologist and returned from Europe in 1914 with this nation's first electrocardiograph and established America's first cardiac laboratory. [14] Later he became President Dwight D. Eisenhower's cardiologist. Yet, the disease was so uncommon that most graduates of medical school in 1920 knew almost nothing of the condition until they confronted it in their practice in the mid 1920's. [15] However, coinciding with people moving from the farms to the cities by the millions in the '20's and '30's to get those high paying factory jobs, the occurrence of heart disease began a steady increase that has never stopped. By 1963, the number of lives lost to heart disease reached, 546,813 in that year alone. In 1971 it was reported that over 1,000,000 people a year were losing their lives to heart disease. Even though since the mid 1970's the death rate from first heart attacks has gone down, the actual total number of deaths due to heart disease has still remained over 1,000,000 per year because the total number of people with heart disease in America keeps going up.

In **fact, the number of lives lost in America each year due to heart disease exceeds** all other causes combined, including accidents and cancer. [4] To put that into some kind of perspective, you simply need to realize that in the 4 years of fierce fighting in World War II, America sacrificed 291, 557 lives to win that war. [17] That is an annual rate of 72,890 lives lost, which is less than 10% of what we lose to heart disease each year. If ever America should declare war on something, it ought to be heart disease.

You have probably heard it said that, "The only reason we have so many people dying from heart disease today is because we are living longer than they did prior to 1920. The people that die of heart disease today are the same ones who died of pneumonia or tuberculosis fifty years ago." The part about people living longer is true. The rest of that line of reasoning is wrong. Here is why. According to U.S. government statistics, the death rate from heart attack among younger men between ages 25 and 44, since 1950 has risen almost 4 times faster than the death rate from heart attacks of older men aged 45 to 65, the ages when most people died of pneumonia and tuberculosis fifty years ago. Worse still, the age of men dying from heart attacks continues to drop lower and lower with each passing decade. [18]

What Changed In the Last Century to Create This Problem?

It does not take the brain of a rocket scientist to realize that when you have a nation of people who prior to 1900 virtually never experienced heart disease at any age, to a nation where heart disease kills over one million people a year, more than *all other causes combined,* that a radical change was introduced into the American way of life that has caused this. In the next chapter, I will introduce you to the Harvard trained doctor and scientist who discovered the cause and cure for heart attacks, and what the change has been in the American way of life that has brought this disaster upon us.

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Chapter Two - The True Cause Of Heart Disease

In the wonderful musical "Sound of Music" the heroine Maria sings these words, "Nothing comes from nothing, nothing ever could…". This simple but profound thought certainly applies to heart disease. Yet, to the millions of people who suddenly discover they have heart disease, especially those who thought they were doing everything right, it seems as if it came upon them from nothing. The amazing thing is, they are almost right. It did not come from what was "in" their food, the cholesterol, fat, or sugar. As you will soon see, it came from what was "not" in their food.

It Takes Something To Trigger Heart Disease:

If we place a loaded pistol that has the safety latch off, and is cocked and ready to fire on a table in the middle of a room, "How long can it lay there until it fires a bullet?" Well of course, the answer is obvious to everyone, "It can lay there forever without firing the bullet until someone pulls the trigger."

The same thing holds true for heart disease. When cholesterol is flowing through the blood at very high levels, blood triglycerides are elevated, blood sugar (glucose) is high, and the blood pressure is elevated, it is like that loaded pistol lying on the table with the safety latch off, and the hammer cocked. Everything is there to create a serious heart problem, but like the pistol, it is going to take something to pull the trigger. Lacking that, no heart disease is going to occur. This is why scientific studies of people around the world have found groups with these conditions, but no heart disease. Like the French, their diet contained the specific nutritional factors that kept the trigger from being pulled on heart disease.

This is why all of us know people, often in our own family who seem to do everything that is supposed to be wrong, and yet they never develop heart disease, and they live to a very ripe old age. I had an uncle like that. My secret nickname for him was "Uncle Slug". He smoked over a pack of cigarettes a day. He always started his day with a double shot of whisky followed by a beer chaser, and his diet included a lot of liquid refreshment for the rest of the day. I just knew he would die at an early age of heart disease. Undoubtedly his blood chemistry would have terrified any cardiologist.

However Uncle Slug fooled me and everyone else, he lived well into his mid 80's and he never did developed heart disease. I'm sure you know people like that. Now that I know what really causes heart disease I realize that his diet, as bad as it was in many respects, it included the specific nutritional factors that kept the heart disease trigger from being pulled.

The First Evidence for the Cause Of Heart Disease:

In the year 1933 an eight year old, mentally retarded boy with a very rare medical condition known as "homocystinuria" was admitted to the Massachusetts General Hospital. He was admitted to the hospital because he just had a severe stroke. Of course, it is very rare for an eight year old to have a stroke. Strokes are for "old" people. Unfortunately, nothing could be done for the boy and he soon died. Naturally it caused a great deal of interest among the scientists on the staff that some one so young would die of a stroke. Thus a thorough post mortem examination of his body was done.

The case was so interesting, it was written up in a 1933 issue of the prestigious New England Journal of Medicine. The pathologist who had examined the boy's arteries wrote, "The arteries had the arteriosclerosis normally seen only in the elderly". [1]

The pathologist made microscopic slides of the arteries, which clearly detailed the arterial scars, the plaque that occurs with advanced arteriosclerosis. However, it would not be until 35 years later that another doctor working in that same hospital would spot that something that is always found in the plaque of adults, was missing in the arterial plaque of this boy.

The "Ah-ha" Of A Scientific Discovery:

In 1968, now 35 years later, Dr. Kilmer McCully, the staff pathologist at that same Massachusetts General hospital attended a conference on human genetics. He listened as the speaker instructed the audience that a specific genetic abnormality resulted in an inability of the body to use vitamin B-6 at a certain point in processing the essential amino acid methionine. This caused the accumulation in the blood of a toxic substance known as homocysteine. This genetic abnormality could be identified, by finding homocysteine in the urine. The speaker went on to state that the large amount of homocysteine in the blood from birth on resulted in these children quickly becoming mentally retarded. [2]

Then later in that same year, Dr. McCully learned of a 9 year-old mentally retarded girl, with homocysteinuria who had been brought to the Massachusetts General Hospital. The mother chanced to mention that an uncle of this child had died with the same condition in this same hospital in 1933. Dr. McCully pulled the archive files and examined the 35 year old microscope slides of this boys arteries. What he saw shocked and surprised him. Just as the original pathologist in the case had observed, the boy's arteries were just as clogged with plaque as those

of an old person. However, something was very different, something was missing! There was no fat, no cholesterol that filed the plaque of the elderly! [3]

Dr. McCully wondered, "Could it be that the elevated blood level of homocysteine is causing these arterial plaques to form long before there is enough cholesterol or blood fat to be included? Is this how an arterial plaque begins? Is this the actual cause of arteriosclerosis and coronary artery disease?"

Another Cause Found For Elevated Homocysteine:

A few months later Dr. McCully learned of a two month old baby that had failed to grow. This child also had homocysteinuria, and it had developed pneumonia and died. This case was different however, in that the elevated homocysteine was caused not by an inability to utilize Vitamin B-6, but an inability to properly utilize Folic Acid and Vitamin B- 12. Dr. McCully wondered, "Could this child, even though only 2 months old, also have arterial plaque because of elevated blood levels of homocysteine, but caused by an inability to use B-12 and Folic acid, rather than an inability to use B-6 as in the first case?" Anxiously Dr. McCully pored over the pathologists report, at first it seemed as if they had either been missed, or the plaque were not there. Then as he got into the details of the report he found it! His suspicions were confirmed; this two-month old baby had "rapidly progressing arteriosclerosis"! [4]

Too Excited To Sleep:

Here were two different cases, separated by 35 years, one of a two month old, and the other of an eight year old; children too young to have arterial plaque, and yet they had arteries like those found in old people. The only other thing these two children had in common was an elevated blood level of homocysteine. The fact that the elevated level of homocysteine was caused by a different nutritional factor in each child, made it all the more convincing that it was the elevated level of homocysteine that caused the arterial plaque to develop. Dr. McCully said that he became so excited over the possibility that here was the cause of arterial plaque in all people, that for the next two weeks it was very difficult to stop thinking about the implications of this discovery long enough to go to sleep.

Looking For Confirmation:

Dr. McCully was forming a theory in his mind that elevated blood levels of homocysteine caused injury to the inside of the arterial walls that produced scars that formed the plaque, which eventually became the arteriosclerosis that created heart disease. While the implications of the findings with regard to these two children, was extremely promising, a very important question needed to be answered in order to confirm the theory. Could it be shown experimentally, that even when there is not a genetic abnormality, but just a very low intake of vitamin B-6, that this deficiency would not allow the amino acid methionine to be processed properly; and that would cause elevated blood levels of homocysteine and arterial plaques to form? Dr. McCully began searching the world of science for research that may have been done that would confirm his theory.

Monkeys That Developed Arteriosclerosis:

McCully learned that in 1949 California pathologist James Rinehart had been conducting experiments with monkey and vitamin deficiencies. Rinehart found that when he limited the supply of vitamin B-6, the monkeys all developed arteriosclerosis. But Rinehart was mystified, because he did not know why a deficiency of vitamin B-6 would cause plaque and the subsequent arteriosclerosis to form in the arteries of the monkeys.

This was exactly what Dr. McCully was looking for. Monkeys have DNA that is within about 1% of being identical to that of humans, thus their physiology is virtually identical. The monkeys were healthy and genetically normal. Ordinarily they could process the methionine in their diet, but lacking enough vitamin B-6 they were unable to do so. This deficiency of vitamin B-6 caused them to have elevated homocysteine in their blood, and this in turn caused them to develop arterial plaque, which created arteriosclerosis, just as in the genetically abnormal children who could not use vitamin B-6. [5]

McCully now had the evidence he needed to confirm that his observations and conclusions were correct. It made no difference whether the inability to process methionine completely was caused by a genetic abnormality, a missing enzyme, or a dietary lack of the necessary vitamins to allow that process to occur, the end result was excess homocystine in the blood. Excess homocysteine in the blood injured the inner lining of the arteries, causing the formation of scarifying plaque. As this homocysteine injury occurred over and over again throughout the arteries, they become hardened with the scar tissue of thousands of plaque. The end result was the arteriosclerosis that creates heart disease. The "smoking gun" that caused the arterial plaque responsible for heart disease had been found!

Since then, scientists all over the world have conducted a large number of studies with human population groups which prove that elevated blood levels of homocysteine are responsible for not only the arteriosclerosis that leads to heart attacks and heart disease, but also may be responsible for many other health problems including

Alzheimer's Disease. You will learn all about these scientific studies in subsequent chapters. Right now, we want to examine the reason so many millions of people in America are experiencing an elevated level of homocysteine high enough to create so many heart attacks and so much heart disease.

Could There Be Widespread B Vitamin Deficiency In The U.S.?

Could it be that there was enough of a deficiency of at least one of the three key B vitamins in the millions of people being diagnosed with arteriosclerotic heart disease in the U.S. to account for all of this? Was it possible that all of these millions of people had vitamin deficiencies that would prevent them from properly processing all of the methionine in their diet? Could it be that this resulted in a destructive build up of homocysteine in the blood high enough to be creating all of this heart disease? These were the questions that were rushing through Dr. McCully's mind. Yet, it seemed almost impossible that such a thing could actually be true. After all, the people of the United States are the best fed people in the world, aren't we? Or is it that we are only well fed, but grossly undernourished?

The RDA (Recommended Dietary Amount) for the various nutrients in our daily diet is established by the National Research Council. These amounts are supposed to be set to reflect the minimum amount needed each day in order to prevent a disease caused by their lack. The key word here is *minimum!* The general public seldom realizes that the RDA for nutrients are not those set for obtaining *optimum* health. If given a choice, which would you chose – nutrition for *minimum* health or *optimum* health? The answer is what the kids call a "no brainer". What this indicates is that the RDA standards are far too low.

Numerous top doctors and scientists, from the Nobel Prize Winning scientist Dr. Linus Pauling to Dr. Roger Williams in whose laboratory more vitamins were discovered than in any other, have all decried the RDA as being woefully in6 adequate. They point out that the huge variety in the way each person's body functions biochemically, plus the huge variation in lifestyles, means that one minimum standard cannot possibly fit all people. They argue that as a result of that, many people are unable to maintain normal body biochemistry or health on the same number of nutrients that another person may find adequate. Thus in their opinion, even a person meeting the minimum daily requirement for nutrients as established by the National Research Council could easily develop major health problems if their body and lifestyle demanded more.

When Dr. McCully began looking into the actual nutrient intake of the average American versus the woefully inadequate RDA he was shocked at what he found. The RDA for vitamin B-6 is currently set at 1.3 to 1.7 milligrams per day, which is way too low, since scientific studies have shown that a daily intake of at least 3 to 3.5 milligrams are required to prevent the elevated blood homocysteine that cause heart disease. Tragically the average American, including the elderly, receives only 1.1 to 1.3 milligram per day. [6] This means Americans, on average are getting less than half the amount of vitamin B-6 they need to prevent heart disease. Little wonder millions of Americans at all ages are developing heart disease and dying from heart attacks.

The RDA for Folic Acid is currently set at 400 micrograms per day, which is high enough to prevent most people from getting heart disease. But, the average American only receives 200 to 250 micrograms per day, while the over 65 age group get even less at only 174 to 220 microgram per day. [7] Once again, we see that Americans, on average are getting only half or less of their folic acid requirement to prevent heart disease. As we begin to understand the cause of this terrible disease, it is easy to see why we have it in so many people. We can also see why the rate of heart disease increases so much as we grow older, because as people age their daily intake of the heart and artery protecting nutrients is going down. It is not so much what we are eating, as what we are not getting in the way of nutrition from our food that is leading to the arterial plaques that create heart attacks.

The RDA for vitamin B-12 is set at a pathetically low 3 micrograms per day. For those Americans who eat plenty of meat and dairy products (the only realistic source of B-12), their daily intake of vitamin B-12 is about 9 micrograms per day, which is nearly 3 times the RDA. [8] This amount has been shown by scientific research, to be just about an ideal daily intake to protect people from heart disease. However, things are not looking so good for people over age 65. Due to a loss of appetite and digestive capacity as people age, they tend to reduce their intake of the foods that contain significant quantities of vitamin B-12. At the same time they experience a reduced, or even total loss, of the ability to absorb vitamin B-12 from their diet. As a result of this, those over age 65 are getting a pathetic 4.5 micrograms of vitaminB-12 per day. This is less than half of what they require to prevent heart disease caused by homocysteine generated arterial plaque.

The evidence is clear, millions of people in the United States are not getting enough of the key B vitamins. Americans of all ages, including teens, are getting only about half the daily intake of vitamin B-6 and folic acid they require in order to prevent an excessive build up of arterial plaque generating homoscysteine in their blood. This is why the death rate from heart attacks is increasing even faster among the younger age groups, because up until now, nutrient deficiencies were primarily a condition of only the elderly. However due to a change in dietary lifestyles to be described shortly, even the very young are experiencing major deficiencies of these heart protective nutrients.

Those over 65 average are even worse off, they get less than half of what they need of all three heart protecting vitamins. Little wonder the incidence of heart disease and death caused by it increases as people age. It is important to realize here, that age is not cause of this. It is the increasing and accumulative effect of inadequate nutritional intake of these key vitamins for too many years that is the cause. The elderly can live free of heart disease just as easily as the very young, provided their daily intake of the heart protecting nutrients is adequate.

The lack of these three heart protecting B-vitamins results in an inability for millions of people to properly process the essential amino acid methionine, which in turn creates an elevated level of arterial plaque generating homoscysteine in their blood. It is clear that the wide spread lack of these essential heart protecting B vitamins is causing millions of Americans to develop the arteriosclerosis that causes heart disease. All we have to do is look around the world and we see confirmation of this fact everywhere. Every nation that has a high level of heart disease also has a low intake of these same heart protective B vitamins. While those nations that have little heart disease have a diet that supplies an abundant amount of these B vitamins.

It Didn't Happen Before 1900 Because The Protective Nutrients Were in the Diet:

Prior to 1900 the majority of Americans lived on farms and in very small towns that were farming communities. Their diet was primarily "home grown" and natural. It was loaded with fresh whole milk, butter, cheese, cream and eggs, as well as lots of meat from locally grown hogs and cattle. When in season they consumed lots of home or locally grown fruits and vegetables. In the winter they ate cold storage crops from the "root cellar" where fresh potatoes, carrots, turnips, rutabagas, cabbages and apples were stored in sand, straw or sawdust.

They also ate sun dried fruit and dried beans, peas, corn and other vegetables. They also consumed home canned fruits and vegetable, especially tomatoes. They also ate that delicious home baked yeast rich bread made from unbleached flour. Ice cream was rare because it was hard work, since you had to create it yourself by turning a hand cranked "ice cream maker". Pies, cakes and cookies were not in great abundance because they had to be "homemade from scratch" from whole and natural ingredients.

If you examine this diet from the standpoint of a nutrition scientist from the U.S. Department of Agriculture, you find that this is a very, very nutritionally rich diet. It produces exceptionally healthy people, and I will give you the proof of that in just a minute. In those days teen-age boys had to get up at sunrise, milk the cows and feed the animals, and then go out and walk all day behind the plow or harrow, and they still had enough energy at the end of the day to square dance that night at the local barn dance. I know what you are thinking.
"Oh boy, here we go again. My great-grandfather' old story about, walking 4 miles to school through 2 foot of snow everyday, and it was uphill both ways." Well maybe your great grandfather's story did become exaggerated a little as the years passed, but cold hard statistics tell us that he may not have exaggerated as much as you may think.
Strong Healthy Young Men Answered America's Call In Word War II 1914 America entered World War I and hundreds of thousands of strong healthy young men from America's farms and small farming communities answered the call to serve in the army. They had been raised on the diet listed in the previous paragraph. Although the medical and physical standards for entering the military were extremely high, the military had no trouble finding enough young men that qualified for those high standards to field the largest, strongest and healthiest army in the world.

The Rush To The Cities Changed The Way America Eats

Good old "Yankee ingenuity" was already creating unprecedented progress and industrial demand by the time that World War I broke out. Factories were springing up in cities and towns everywhere. These factories needed workers, and they paid more money than men received working on a farm. Businesses of all types were multiplying in support of the manufacturers, and they needed women to staff their offices.
For the first time, a large number of women were offered respectable non-farm jobs. Thus a migration to the cities was already underway by the time World War I began. As always, a major war greatly increased the demands upon the civilian population to provide the materials the military needed to fight that war.
What had begun as a trickle of people from farms to the city just after 1900, turned into a river during World War I, and a veritable flood after the war. That old song, "How You Gonna Keep 'Em Down On The Farm, After They've Seen Parie?" was an apt description of the effect World War I had on American boy's who found out there was more to life than cotton and cornfields. The call of what appeared to be a better and more exciting life in the cities resulted in a massive shift from the farms to the cities that forever changed the way Americans would eat.

No Room To Grow Your Own Food, No Time To Prepare It From Scratch

The shift to the cities resulted in millions of city dwellers living in apartments or in houses on tiny city lots with no way to grow their own fruit, vegetables, cows for milk, butter and cheese, chickens for eggs or meat, or hogs or cattle for meat. To city dwellers, food no longer came from their farms and gardens; it came from the local grocery store. Increasingly, mom was working in an office, a retail store, or a factory and she had no time to prepare meals from scratch. Mr. Ford had introduced an automobile that anyone could afford, as well as the assembly line that

others quickly adopted to manufacture all the wonderful new things that Mr. Edison had made possible. With the electric light the activities of the day were extended, and with movies to see, and a car to get there in, life was too exciting to stay home and make meals. Thus the demand for fast and easy to prepare meals spawned an entirely new industry. Soon America was eating biscuits made from a dry mix in a box that only took water, and cakes and cookies made in the same way. It seemed home made because it came from mom's oven, but the ingredients were not anything like those that she used to make them from "scratch". Macaroni and cheese also now came from a box to make a fast meal. In fact, all kinds of meals and soups now came from boxes and all it took was water and a little heat to seem just like what "Mom used to make". Cans and jars of fruit and vegetables were fast and a lot more convenient than cleaning, culling and paring the fresh fruits and vegetables. Just open the can or jar and heat. There just wasn't time to cook the old standby breakfast of ham, or bacon, eggs and potatoes. Even heating up a little oatmeal seemed like too much trouble. Not to worry. Cereals of flakes of corn, oats or wheat with the sugar already on them were available, just add cold milk and eat. As the wonders of the 20th Century just kept coming, the desire to "do and have it all", all at the same time, kept condensing the time spent in the process of obtaining and preparing food into an ever smaller unit of time. Restaurants sprang up everywhere as more and more people "dined out". To dish out food as fast as their customers wanted it, the restaurants relied more and more on prepared food items. Even this was too slow to keep up with the rapidly increasing American pace of life. People didn't even want to take the time to get out of their car and go into the restaurant and wait for a meal to be prepared, and thus the "drive in restaurant" came into existence. Immediately following that, "fast food meals" became the vogue as McDonalds opened the door to what is now an entire world filed with every type of fast food facility imaginable.

Twenty-Seven Years To Lost Health

It was twenty-seven years between the beginning of World War I and World War II. The difference in the American way of life that had occurred during this time was the greatest shift in the culture of humanity the world had ever seen. It all seemed so wonderful and innocent. What no one realized was that an invisible loss was taking place. The loss of human health and the beginning of enormous suffering due to heart disease, resulting in the most costly medical and health care system the world has ever known.

When World War II began, the military had the same high physical health standards for entrance into their service they had maintained throughout World War I. It never occurred to them that the physical health of American men might have deteriorated significantly during those intervening twenty-seven years. However, within six months that reality was brought rudely to their attention. The plain fact of the matter was, that so many men were unable to meet the high physical health standards of World War I, that if they did not lower them, the military would not be able to field an army. And lower them they did! With each passing year of the war, the standards were dropped lower and lower, until by the end of World War II, they were so low that unless you were actually ill, you were in the army.

Nature Was Sending A Message That America Ignored

The significance of the severe decline in the physical health of young American men who had been raised on a diet that consisted in large part of prepared foods went right over the head of the American nutrition, health and medical professionals. Nature was sending a warning, but no one was paying attention.

At the very same time the health of America's young men suffered a decline, there was a simultaneous increase in the number of deaths caused by heart attack. The amount of heart disease rose in America until it became epidemic. From virtually nothing prior to 1900, until today when heart disease is killing more American's each year than all other causes combined, including accidents and cancer. The cause of all this heart disease is the exact same one that resulted in the decline of physical health in America's young men. Both of these things are caused by a dietary loss of the essential nutrients required to produce good health. This nutritional loss was created when America shifted to a new diet, one that was heavily laden with nutrient deficient prepared foods.

Here Is How It Happened

It began as what appeared to be, the simple and logical steps to meet the food needs of a rapidly changing American society. The need for flour to make biscuits, bread, rolls, crackers, cookies, cakes and all those prepared foods was and is an essential commodity of our food supply. For centuries after flour was invented, it was either milled from the raw whole grain at home, or in a local mill. Since whole grain had a germ in it that was rich in both oil and nutrients, it was much prized by rodents and insects of all kinds as a great source of nutritious food. Additionally the oil was also highly subject to turning rancid when exposed to air and heat. Flour that had gone rancid and was rodent and insect infested had no commercial value. No one would buy it. Which is why for centuries flour was made close to home and only kept in small quantities that could be used before it was spoiled by rodents, insects or rancidity. However, when millions of people moved from the farms to the cities east of the Mississippi river during the early 1900's, they no longer lived close to a mill that could turn grain into flour. Most of the grain was now being grown on the western plains of the United States and it had to be shipped by rail for long distances to giant storage silos in the midwest. There, great mills were established to turn the grain into flour. The market for that flour was in stores and bakeries hundreds of miles away. During shipment and storage of the flour, it would become rancid and infested with insects and attacked by rodents. The solution to this problem soon became apparent, remove the germ from the

grain before it was ground into flour. This would remove the oil so it would not go rancid, and the nutrition so the flour would no longer be attractive to insects and rodents.

The Birth Of "Enriched" Flour

It did not take long for it to become apparent that this flour, so easily shipped and stored, was also devoid of nutritional value. So after a considerable debate between the giant mills and the U.S. Department of Agriculture, it was agreed the mills would add back a small amount of 5 of the 17 nutrients they had removed. The mills engineered an advertising triumph worthy of an Oscar by referring to the fact that they were adding back a small percentage of 5 of the 17 nutrients they had removed, and were now offering the public "enriched" flour.

I doubt very much if these millers were to face a thief who took $17,000 from them, but then gave them back $5,000, that it would leave them feeling "enriched"! Yet that is the "spin" they have tricked the American public into believing.

As a nation of people, we have been fooled! Duped into thinking we are eating "enriched" flour, bread, cakes, doughnuts and that all of these prepared foods of all kinds are nutritious, while all the while they are really nutritionally deficient.

Adele Davis the famous nutritionist wrote of this nutritional robbery in her great book "Let's Get Well" in these words, "A widely read woman's magazine of July, 1964 says, 'Thanks to vitamin-enriched bread, white and whole wheat are now equally nutritious.' Yet most of the pantothenic acid, folic acid, biotin, choline, inositol, vitamin B-6 and E are discarded in the milling. The 'airy snow-white loaf' has been further damaged by being bleached. Losses of iron, cobalt, potassium, magnesium, zinc, copper, and molybdenum range from 50 to 87 percent. The amounts of the vitamins B-1, B-2, niacin, and iron returned to the ridiculously labeled 'enriched' flour are far less than the quantity occurring naturally. Adding a few B vitamins can induce deficiencies of the B vitamins not supplied."[9]

I want you to pay particular notice that she pointed out that Vitamin B-6 and Folic acid are stripped out of the flour during the milling process, but they are not among the nutrients that are replaced. This tells us that all of the commercial flour, and hundreds of prepared food products which contain it, consumed by Americans every single day, are nutritionally deficient in these key and vital nutrients so essential in the prevention of heart disease.

These are the very nutrients Dr. Kilmer McCully discovered, which when deficiencies of them occurs, causes a buildup of homocysteine in the blood stream. The very same homocysteine that causes arterial injuries. Injuries that turn into thousands of arterial plaques, which then create the diseased arteries that result in a million heart attacks a year, half of them fatal within the first hour.

Sugar The Nutritionless Food!

Although at the beginning of the 20th Century the average American consumed only about 40 pounds of sugar per year, today that has risen according to the U.S. Department of Agriculture, in excess of 160 pounds of sugar per year for every man, woman and child. [10] That is over one third of a pound of sugar a day! This does not even include the additional use of fructose rich corn syrup used in all types of prepared foods.

All you have to do is look around you in the shopping malls, schools and sporting events and you see babies and children as well as teenagers and adults chugging down on sugar-laden soda pop. Soft drinks have now become America's number one beverage, over milk, juice, coffee or tea. Then there are all the frozen confections, from ice cream to frozen pop on a stick. Not to mention the millions of tons of candy, cakes, cookies and other sugar rich goodies. Sugar and the so-called food made from it, are called "empty calorie" foods because SUGAR CONTAINS NO VITAMINS OR MINERALS WHATSOEVER!

Thus the more sugar there is in your diet, the less B vitamins you are getting. Worse still, is that in order to process the sugar and use it as energy, you need B vitamins to do that. Thus the higher your sugar intake, the more B vitamins you use up, and the more likely you are to become deficient in the B vitamins. A high sugar intake causes you to become deficient in the very B vitamins whose lack causes heart disease.

Canned And Frozen Foods Have Lost Nutrients

As you stroll through a supermarket you will note that the center of the store is filled with aisle after aisle piled high with shelves of canned and bottled fruit, vegetables, and juices. Numerous scientific studies have shown that the canning and bottling process has destroyed from 50% to 85% of the nutrients that were in the original food when fresh. You will also see refrigerator case, after refrigerator case loaded with not only frozen fruit and vegetables, but entire meals, all ready for the microwave. Although the nutritional loss for most frozen foods is not as great as that of canned foods, it still results in an average of 35% to 65% of the original nutrients, and in the case of the frozen meals it is even greater.[11]

The Loss Of Nutrition From Your Food Is Everywhere

As you have just seen, ever since about 1900, all the food we eat which is made from flour is devoid of the very nutrients we need to protect our blood vessels from destructive injury leading to heart attacks. In addition, as a nation we have increased our vitamin-less sugar intake nearly four fold.

Raising our caloric intake and need for B vitamins while at the same time reducing their intake by displacing quality foods in our diet with sugar. At the same time, we have lowered our consumption of vitamin rich fresh fruits and vegetables and increased our intake of nutrient reduced frozen foods. We have come to rely more and more on

nutrient deficient factory prepared foods. Tens of millions of essential B vitamin deficient fast food meals are served all across America every day. The bottom line to all of this is, that millions of Americans, beginning in childhood are deficient in the essential nutrients required to protect them from heart disease. This is why we see an ever-increasing number of children and young adults dropping dead of a heart attack

You Now Have The "Smoking Gun" Of Heart Disease!

Now you know why millions of Americans are not even getting enough of these vitamins in their diet to meet the ridiculously low minimum RDA. This is the "smoking gun" behind the explosion of heart disease after the beginning of the 20th century. This is why millions of American's have developed heart disease. This is why over a million Americans die from heart disease each year. The nutrient deficient sugar, flour laden foods, highly refined prepared foods, canned and frozen foods and meals, and the fast food diet of America not only lacks the nutrients required to keep us from developing heart disease, the lack of these nutrients in our diet is actually CAUSING heart disease!

No miracle drug or surgical procedure will ever cure heart disease, only by replacing back into the diet the missing B vitamins will we end this nightmare.

You Can Begin Preventing, Reversing and Eliminating Your Heart Disease Today!

The first step is to get as many foods and beverages out of your diet as you possibly can that have been canned, frozen, milled, or factory prepared. Especially avoid as many foods as you can that are made with sugar and flour. Pass up those fast food joints and get as many home-prepared meals made with fresh whole food as possible. Next, get as many foods into your diet as you can that are fresh. Fresh fruit and vegetables, milk, eggs, butter and natural cheese, as well as bread that is made from whole grains. Fresh red meat is loaded with B vitamins, liver is the best source, and fish is also loaded with important oils your body needs. Since, in our hectic world many of us are trapped in a lifestyle that simply does not let us eat the way we should, we must supplement our food intake with vitamins and minerals.

To protect ourselves from developing heart disease, and certainly in order to reverse and eliminate it, we MUST TAKE VITAMIN SUPPLEMENTS!

The more food we eat that is made with flour, the more sugar we consume, the more prepared foods we eat, the more restaurant and fast food meals we consume, and the older we are, the more vitamin deficient we are going to be. If our family has a history of heart disease, that indicates we may have a genetic need for these vitamins that is even greater than that of the average person. We are the ones who need to take vitamin supplements most of all. We can't fool around with low powered supplements that meet just 100% of the RDA. The vitamin bank account in our body is suffering from a huge overdraft, and in order to make it up, we are going to have to take vitamins that will give us several times the minimum RDA.

Don't worry, at the level I will suggest later on in this book, it will still be well below anything that could create a problem. Since these vitamins are water soluble, they wash out of the body quickly, even an overdose is washed out rapidly and no harm is done. However, being so safe because they are water-soluble also creates a problem. In order to eliminate a vitamin deficit in your body, and drop your homocysteine level, you have to get that vitamin level up there high enough to over ride the deficit and begin building a vitamin reserve. You need this nutritional reserve so that later on in this book when I reveal a program that will allow you to clear the plaque from your arteries, your body will have what it needs to do it. Creating this reserve is a lot tougher to do than it sounds.

This is because the liver and kidney's will start removing the supplemented B vitamins from the blood before they have that much of an opportunity to get into the cells and tissues. If you take them only once a day, you will make very slow progress because you only get one short chance a day to fill up that deficit. However, if you take your supplements 3 or even 4 times a day as I prefer for those with diseased arteries, you keep replenishing the vitamins in the blood, as fast as the liver and kidney's can lower them. This means that over a 24 hour period, your body's cells and tissues will get 3 to 4 times as much nutrition as you would get if you only took your supplements once a day. When your life is in danger because of plaque lined arteries and a history of personal or family heart disease, you don't want to take months to do what you could have done in a few days or weeks had you taken the right supplements, in the right amounts, at the right times.

Coming Up Next!

In this chapter I have explained how Dr. Kilmer McCully discovered the cause of heart disease, what that cause is, and how you can eliminate it. I deliberately kept it simple, free from all the details of the scientific evidence that has now been amassed that proves its validity. I kept it simple because I wanted you to gain a clear understanding of how excess levels of homocysteine in the blood damages the arteries and creates heart disease. I didn't want to clutter up your mind with a lot of peripheral issues that might cause you to miss the point. In subsequent chapters you will be getting all the details, plus a full understanding of the true role of cholesterol and triglycerides in heart disease.

You may be wondering why you haven't heard that much about Dr. McCully's amazing discovery before now. After

all, you would think that a discovery that would allow a simple inexpensive means available to everyone to end and reverse heart disease, would be front page news for every newspaper and magazine in America, as well as the News hour on national TV. So why haven't you heard about it?

In the next chapter I am going to tell you why. Dr. McCully's discovery is so monumental it may one day be awarded a Nobel Prize. It is a story so filled with professional fear, fierce opposition, skullduggery and intrigue that it will fascinate and amaze you. This is the kind of story that will probably become the subject of a TV documentary someday.

However, you don't have to wait, just turn the page and the full story will unfold right before your eyes.

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Chapter Three - The Uneasy Path Of A Newly Discovered Truth

"Personal self-satisfaction is the death of the scientist. Collective self-satisfaction is the death of the research. It is restlessness, anxiety, dissatisfaction, and agony of the mind that nourishes science."

- Jacques-Lucien Monod

You have already learned in Chapter Two about the type of food you need to reduce in your diet, and the type you need to increase, as well as the three key vitamins to supplement, which will not only prevent, but will actually help the body to immediately begin reversing heart disease. It really is not difficult, it is actually easy, but there is one very important thing you have to be clear about, you can't just think about it, you have to actually do it.

In the following chapters of this book, you will learn how the discovery of homocysteine as the cause of heart disease ties together into one neat package of understanding, all of what otherwise seems to be a mountain of conflicting and confusing data with regard to heart disease. You will also learn what the true relationship of cholesterol, triglycerides, high blood pressure, elevated glucose, and free radicals are in relationship to heart disease. In addition you will also learn about some new breakthrough nutraceuticals and how you can use them to bring all these different aspects of heart disease into total control and eliminate the risk.

The High Cost Of Ignoring A Newly Discovered Truth

Now, it is time to tell you why you haven't really heard that much about Dr. McCully's scientific breakthrough – until now! Dr. Kilmer McCully discovered the true cause and solution to heart disease way back in 1969. He began publishing his findings and the details of his theory about the cause of heart disease in 1970. All throughout the 1970's the proof of his theory began to pile up and he published more and more about those findings.

Tragically, the medical community and the media completely ignored what Dr. McCully was saying. As a result of their ignoring his message, since 1970 over 16 million people have died needlessly of heart attacks and over 16 million others have died of heart disease. In excess of 32 million people in the United States have needlessly lost their lives to heart disease simply because the simple truth discovered by Dr. McCully has been ignored by the medical community. If you took all the American lives lost during that same period of time due to accidents, murder, war, drug and alcohol abuse, cancer and all other diseases, the grand total would not equal the needless loss of life that has occurred as a result of ignoring Dr. McCully's discovery.

Why The Truth About Heart Disease Has Been Ignored

There is an old saying that if you want to understand why something has occurred in society that seems to defy logic, "Just follow the money!" As we have sadly learned over the past two decades, some men and women of high

standing in politics, business and industry are more influenced in their professional actions by money than they are by doing the right thing. (Watergate, Savings & Loan Scandal, Whitewater, Enron & etc.) Yet we find it hard to imagine that men and women of high standing in science, medicine and academia would be more influenced by the power of money and career advancement than that of pursuing the truth. We tend to think that those in these professions are made of better moral fiber and dedicated to a higher standard than those of politics, business and industry. Unfortunately, as we shall soon see, there are always some, just as in all the rest of society, who are more dedicated to preserving the cash flow and their reputations and careers than they are in seeing and promoting the truth.

The Unsung History Of Medicine

At the beginning of the Common Era it was believed that "spirits" flowed through the arteries. Then in the second century the pioneering anatomist Claudius Galenus of Pergamus advanced the idea that blood and not spirits flowed through the arteries. He was immediately rejected and harassed throughout his life for such heresy. In the middle of the 16th century Vesalius was a faculty member of the University of Paua when he published De Humani Corpis Fabrica, the results of a lifetime of work as an anatomist. Unfortunately for him, he dared to point out in this wonderful work, over 200 errors he had discovered in the anatomical charts that were currently being used in medical training. Rather than being grateful for his discoveries, he was fired from his post and his findings were ignored.

In the 17th century the scientist William Harvey was completely shunned because he had the audacity to announce his discovery of how blood was circulated throughout the body. Also at that time G.A. Borelli was forced to leave the city of Messina for daring to explain in his De Motu Animalium that movements of the body worked according to mechanical principles. Shortly thereafter the lens maker Anthony van Leeuewenhoek built a unique device he called a microscope.

Through it, he claimed to see tiny life forms that went through life cycles. His discovery was ridiculed and ignored for decades. In 1721 in the city of Boston Dr. Zabdiel Boylston was nearly hanged because he tried to halt a smallpox epidemic by vaccinating people with serum from cows that had recovered from cowpox. American doctors were so stirred up they worked to get laws passed which would imprison both doctor and patient involved in any such procedure. It would be another 80 years before the work of Edward Jenner of England was to successfully introduce the cowpox vaccination that prevented human smallpox. Meanwhile millions worldwide died terrible and agonizing deaths or were disfigured for life.

Up until the middle of the 18th century it was believed that what we now call nerves was actually a series of tubes that pumped a fluid into the muscle to make them expand.

When Albert von Haller announced in 1759 that muscle movement was actually induced by the flow of a signal from the brain traveling over a network of nerves, his contemporaries were outraged and vented their anger at him.

In the middle of the 19th century there appeared three giants whose discoveries were to change the course of medical practice for all time. One of them has even become a household name in our modern world of today. Yet, at the time of their discoveries they were ignored, scorned and ridiculed. It seems impossible today that this could have been the case, but it was decades before their discoveries were accepted.

One of these men of science was Louis Pasteur in Paris, France who was laughed at when he advanced the theory in 1862 that the germs seen in the microscope invented by Leeuwenhoek 100 years earlier were actually the cause of infectious diseases. Next was Robert Koch the German physician, following in the footsteps of Pasteur as a bacteriologist he announced in 1875 that tuberculosis was caused by a bacteria, and was met by ridicule. In 1905 he was awarded the Nobel Prize for that discovery.

At the same time that Pasteur and Koch were making and announcing their discoveries about the infective nature of microorganisms, and being received with scorn, a third doctor was trying to tell his colleagues something very similar. He was the Austrian physician Ignaz Philipp Semmelweis. He noticed that babies born in the local hospital had a high rate of survival, while those born in a home for unwed mothers had a very low rate of survival. Thinking about what could be the cause of this, he observed that after the doctors tied up their horses and tended to them in the stalls, when they entered the hospital they washed their hands, but in the home for the unwed mothers, they did not bother. In 1861 Semmelweis told his colleagues that something on their hands coming in with them after attending to the horses was causing the high death rate among the babies born to the unwed mothers, and instructed them to wash their hands prior to delivering any baby. The doctors reacted with anger and indignation at being told to wash their hands before delivering a baby. They were so incensed that they ejected the good doctor from his hospital post and hounded him until he gave up his practice and left the city. Alone, financially destitute and rejected, Dr. Semmeilweis went insane and died in a small country village.

So ashamed of their treatment of Semmeilweis has the medical profession become, that they now have a Semmeilweis Award which is presented to modern medical doctors who introduce a breakthrough concept which leads to professional rejection, but whose truth is eventually proven. Sad isn't it? We now live in a time 140 years later, and the same kind of thing is still going on. So much so, that we have to give out awards to those who still suffer rejection for discovering a new scientific truth.

Note: I am deeply indebted to Dr. Richard Passwater for sharing the above information with us through his excellent book Super-Nutrition. [1]

Sadly, New Medical Truth It Is Still Being Fiercely Resisted

In the early 1970's Dr. Stanley Prusiner had become fascinated by a strange disease of the brain that afflicted the Fore highlanders of Papua, New Guinea. It was called "kuru" and by the time of their death, the disease had left its victim a mindless zombie.

The medical authorities around the world classified this disease as a strange form of neurological degeneration. When Prusiner studied the native people who became afflicted with this disease, he learned about a very strange custom they practiced. To keep their dead ancestors living with them in their version of eternal life, the natives ate the brains of their recently deceased relatives. The idea being that part of that person now became a part of them.

Dr. Prusiner noted that kuru had a lot in common with three other brain disorders, one, Creutzfeldt-Jacob disease that occurred in humans, and two others, scrapie in sheep and mad-cow disease that occurs in cattle. His comparative examination of these four degenerative brain diseases led him to believe that it was not occurring because of a breakdown, a simple degeneration of the nerve cells of the brain as had been believed, but that it was due to an infective agent of some sort. He was soon able to determine that this infective agent was not a bacteria, but possibly some sort of a virus.

However the more he delved into the molecular science of these conditions, the more he realized that it was not a virus. It was something even smaller and more primitive. Through careful research Dr. Prusiner began to pull together the pieces and finally came up with an announcement that rocked the scientific world. The disease, he stated, was due to a tiny fragment of an extremely primitive protein that was not even alive. It did not even contain DNA. He called his discovery, Prions, and he stated that not only was it highly contagious upon ingestion, but that it was nearly indestructible.

Naturally the other neurologists thought Prusiner was completely "out to lunch" on this. For over 20 years Prusiner was treated with ridicule and scorn. Then gradually, little by little, scientific research designed to prove him wrong, ended up proving he was right.

Of course with the terrible outbreak of mad-cow disease in England and parts of Europe, the whole world suddenly began to learn the disease was caused by a nearly indestructible, primitive protein. One that lacked DNA, and was called a Prion. In October of 1997 Dr. Prusiner was awarded the Nobel Prize for medicine. [2]

In the early 1980's an Australian pathologist working at the Royal Perth Hospital observed that several stomach ulcers, which he examined microscopically, contained a bacteria known as Helicobacter pylori. Could it be, he wondered, that instead of stress and excess stomach acid that these ulcers were really caused by an infective bacteria. The more he examined stomach ulcers, the more convinced he became. So Dr. Barry Marshall published his findings. Like so many others before him who dared to suggest something new, he and his fellow researcher Dr. Robin Warren were met with ridicule and disbelief.

To prove that he was correct, Dr. Marshall dared to do something extraordinary. After having it proven that he did not have a stomach ulcer, he deliberately drank a mixture of Helicobacter pylori, and promptly came down with a terrible ulcer that took him years to cure. Other doctors, anxious to prove him wrong, began to conduct their own research, and the more they did, the more it became clear that Dr. Marshall was right. After almost 20 years of suffering ridicule at medical conferences all over the world as Marshall spread the message, the day finally came in the mid '90's when his discovery was finally accepted into the mainstream. [3] Today, no modern clinician diagnosis stomach ulcers as being due to stress, and instead of treating them with bland diets, they are given the appropriate antibiotic. This is the same kind of mentality that Dr. Kilmer McCully met when he told the medical world that homocysteine was the cause of heart disease, except that he met an even greater obstacle, a huge multi billion dollar medical machine built upon the cholesterol theory.

Why New Information Has Not Been Welcome At The Cholesterol Party

At the beginning of the 20th century arterial plaques were just beginning to appear in modern human arteries and scientists quickly found themselves a fascinating subject of study.

It was soon discovered that among other things, these plaques contained a substantial amount of cholesterol and fat. Just because umbrellas appear when it rains, does not mean that umbrellas cause rain. Nor does the appearance of cholesterol and fat in arterial plaques mean they cause it. In fact, in spite of nearly 100 years of study of cholesterol, and arterial plaque, NOT ONE STUDY HAS EVER ESTABLISHED THAT CHOLESTEROL CAUSES ARTERIAL PLAQUE. There is no proof whatsoever that it does!

Furthermore you cannot find one M.D. in America who would claim that it does. Which is why scientists are forced to use the word "associated" to connect cholesterol to arterial plaque and heart disease. Indeed there is an association between heart disease and elevated blood cholesterol and in the next chapter I am going to tell you exactly what that is and how you can quickly, easily and inexpensively eliminate it as a risk factor. However, it is a myth that cholesterol causes arterial plaque, heart disease or heart attacks.

The cholesterol myth began back in 1908 when Russian scientists found that feeding diets high in cholesterol to animals that were vegetarian would produce arterial plaque laden with cholesterol. From these experiments a false conclusion was reached, that a high amount of cholesterol in the diet led to the formation of arterial plaque. [4] The reason this conclusion is false, is that vegetarian animals do not have the physiological capacity to handle

cholesterol. This is because cholesterol does not appear anywhere in the vegetable foods their body has operated on for hundreds of thousands of years.
They therefore never developed the physiological machinery to handle cholesterol in their diet.
In 1916 Dr. DeLangen, a Dutch physician, found that Indonesian young men recruited to serve as stewards on Dutch ships, were discovered to develop arterial plaque after serving in that capacity for several years. Yet they had no such plaque on their native diet at home. The conclusion was falsely drawn that it was the high amount of cholesterol in the rich diet served aboard the Dutch ships that lead to the development of arterial plaque. [5] The truth was, their native diets were rich in the heart protective B Vitamins folic acid, B-6 and B- 12, and the diet aboard the Dutch ships were deficient in these vitamins. Building on these erroneous assumptions, scientists have continued to conduct experiments and look at people from all over the world with the same false perspective. Except in France, they have found that wherever there is a high intake of food that is rich in cholesterol, there seems to be an increase in the amount of plaque and heart disease. [6] After hundreds and hundreds of cholesterol related studies and experiments, even though they could never find the actual mechanism that caused arterial plaque to form, the presence of cholesterol in the diet and in the arterial plaque was enough evidence for the medical profession, that the one caused the other.
By the early 1970's the medical hierarchy in the U.S. Institutes of Health, and the medical universities had made a flawed, "consensus of opinion" decision. They decided there was a definite cause and effect relationship between high cholesterol intake, and the incidence of heart disease and heart attacks. [7]
At that point the medical "authorities" decided to become heroes to the American people by using all of the power of the U.S. Government's Health Institutes to wage a media war against cholesterol. Eager to become part of something big and heroic the media grabbed the anti-cholesterol information that was sent out to them, and it was heralded as the end to heart disease. The story, in a hundred different forms filled every newspaper, magazine TV channel. Just avoid eating cholesterol and all would be well.
The importance of this was not lost on the food industry. Soon you saw labels on every product that never contained cholesterol in the first place, bragging that this food did not contain cholesterol. The major food companies put their scientists to work eliminating the cholesterol from their food, or where that was impossible, to at least lower it. Soon the idea was established in the mind of the American consumer that low cholesterol foods were healthy foods. On this basis, many people saw white sugar and devitalized white flour as health foods.
The drug companies were also eager to get in on the anticholesterol craze. They had their scientists burning the midnight oil searching for chemical compounds that would block cholesterol from being formed in the liver and would thus lower its level in the blood to one that could be considered healthy. This has paid off big time. Today, the "statin" family of cholesterol lowering drugs taken by millions of people, at a cost of about $100 per month per patient, is generating billions of dollars in drug company incomes each month. [8]
Unfortunately none of this was really lowering the amount of heart attacks and heart disease. Thus the medical schools and large hospitals began to look for heroic measures to save the lives of those who survived a heart attack for at least a few hours. First heart transplants with all of their heroics were tried, but the cost and complications of that soon proved it to be an unworkable solution. Next came the radical and invasive open-heart surgery with blood vessels of the legs used to replace those in the heart. Then came balloon angioplasty. Thousands of these procedures are performed every week. The cost of these procedures is so expensive that only the federal government can pay for it. It has been estimated that in the year 2002 the cost of the federal subsidy to the hospitals and doctors providing these procedures will exceed $50 billion. It is quite a large and expensive party the cholesterol theory has thrown. Millions of people are attending this party every year. Billions of dollars are flowing like wine into the hands of the drug companies, the surgeons, doctors, hospitals, medical schools, universities and research facilities. Now, be honest with yourself, considering the situation, how welcome DO YOU think Dr. McCully's challenge to the validity to all of this would be?

Harvard Medical School Blackballs McCully

Dr. Kilmer McCully is not someone who had graduated from some foreign university or backwater medical school. Dr. McCully had gradated from Harvard University and the Harvard Medical School, America's best. In addition, he was given a position as a professor on the Harvard staff, a position he held for 14 years. He was also given an appointment with his own lab at the affiliated Massachusetts General Hospital. He was an expert in genetics, biochemisty and pathology. This doctor was extremely well qualified and well connected.
In 1970, before cholesterol became the big industry it is today, when Dr. McCully first advanced his homocysteine theory, the Scientific Advisory Committee of Massachusetts General Hospital presented him with a special award that among other things stated his work with homocysteine illustrated, "… the unpredictable, important contributions which can come when an imaginative, skilled worker is given free rein to follow his ideas and findings."
By the year 1977 more and more data was accumulating around the world that demonstrated McCully's theory was right on target. However by that time, the "powers that be" at Harvard and Mass General had decided to put their weight behind the cholesterol theory of heart disease. That meant cholesterol was in and homocysteine was out. Which meant that unless they could convert McCully to the cholesterol cause, he too was out. As with any good scientist dedicated to the truth, McCully would not become a turncoat.

As a result of his refusal to abandon homocysteine research, his laboratory at Mass General was promptly taken away. He was told that his contract, which ran through 1978, would not be renewed in 1979. Suddenly at mid-career McCully found himself without a lab in which to do research, and without a staff position, or an income.

Of course the logical thing is to go get another job, right? Michele Stacey in her New York Times Magazine article entitled, "The Fall and Rise of Kilmer McCully" documents the following efforts of McCully to do just that. Throughout 1979, 1980 and 1981 Dr. McCully criss-crossed the country making a total of 51 employment applications at hospitals and universities everywhere. Each one would start out favorably and then evaporate into thin air. Over and over in the closing interviews he was told to give up his ideas of doing research and settle for being a pathologist, in which case they might have a position for him. But McCully was not about to sell his discovery short.

Of course, I know you won't be able to believe the rest of this actually happened right here in modern America – right? Eventually word began to leak back to McCully that "certain" phone calls were coming from Harvard to his various job application sites. Little things were being said to "poison" his employment opportunity. There were unflattering things said indicating his work, his habits and even his character may not be of the best caliber. McCully hired a Boston lawyer, and legal proceedings were begun against the officials at Mass General Hospital and Harvard. I guess you can't imagine what happened next. A job offer came through at the Veteran's Administration Hospital in Providence, Rhode Island where Dr. McCully has continued to conduct his research work ever since.

Note: I am deeply indebted to Michelle Stacey and wonderful article in the New York Times Magazine for the information on Dr. McCully's struggle. [9]

In Face Of Giant Opposition McCully Is Proven Right After All

All over the world, scientists who were not beholden to the cholesterol dominated U.S. drug industry and their handmaidens at the University Medical Schools and the giant hospitals, slowly began doing the research into homocysteine which has proven that it is not only the cause of atherosclerosis and coronary artery disease, but also implicates it as the likely cause of many other major illnesses including Alzheimer's. Their research has recently been published in the best of peer reviewed medical and scientific journals.

Since this book is about ending heart attacks, and not just about homocysteine, it is not appropriate that we spend page after page documenting the research which now proves the truth and reality of it being the cause of heart and artery disease. However, for those who would like to take a look at some of that evidence, a partial bibliograhy of the recently published articles, which prove the validity of homocysteine as the cause of heart and other diseases is listed at the end of the book.

In The Next Chapter - The Truth About Cholesterol

In the following chapter you are going to learn what cholesterol really is, what it really does, and where it really comes from. You are also going to discover how it impacts your heart and arteries after they have been scarred by homocysteine. In addition I am going to tell you about the amazing new nutraceuticals you can use to protect yourself from the "bad" cholesterol, and at the same time create a "protective" cholesterol.

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Chapter Four- Saturated Animal Fat - Human History's Best Energy Source

Virtually everyone in America has been educated by the media to believe that fat (lipids) in the blood are dangerous, and that it only gets there from eating fat. This is just one more example that shows that what "everyone knows" is often completely wrong. Actually having fat (lipids) in the blood is a very important, essential and vital part of our basic metabolic machinery. Without those blood lipids, our cells, our tissues and our body would soon run out of energy and we would die.

Another error in that thinking is that we only get fat in our blood from the fat that is in our diet. In today's world, for

some individuals, they have more lipids in their blood which have been manufactured in the liver out of the excess glucose derived from their high carbohydrate diet of sugar and flour laden foods, than from their low fat diet.
The Modern Diet Does Not Fit The Human Body. Humans have been on the Earth for at least 100,000 years and probably a lot longer than that. However, we have only had agriculture for the past 10,000 years at most. [1] In other words, for at least 90% of our existence, humans have had a diet that was very different from what it has been after the introduction of agriculture. In addition to that, we have only had an abundance of processed sugar and flour foods for the past 80 years. [2] This means we have only been eating the diet we do today, for about one tenth of one percent of human existence.
That of course, is not nearly long enough for our body to have adapted to it in a way that will produce good health.

The Diet Of Early Humans

In the beginning our most ancient ancestors lived in warm, moist climates that had plenty of vegetation to live on fruits, vegetables, roots, tubers and herbs, as well as insects, grubs, and worms. As thousands of years passed, humans developed their social skills and the ability to utilize primitive hunting tools such as spears, bows and arrows. With these hunting tools in hand they added lizards, snakes, rodents, and fish to their diet. As our early ancestors improved their hunting skills over time, they added more meat to their diet because they were able to kill larger and larger animals with more regularity. Scientists tell us that it was the addition of a significant quantity of meat in the diet, which provided humans with an abundance of protein and fat in their diet that allowed both the human brain and body to develop to the pinnacle we now occupy. [3]

Social Disagreement, A Trait That Spread Humans Around The Globe

As you may have noticed, while it is true that humans are social creatures, they also tend to disagree with each other about a lot of things. As a result of this tendency, they band together into little social groups of like beliefs, either to achieve something, or to escape something they don't like.
Anthropologists tell us that it was this distinctly human trait that drove groups of early humans to leave the original group and head off into unknown territory on their own. It was this trait that led to the inhabitation of the entire European continent. [4]

The Settlement Of Europe Created A Meat Centered Diet

The significance of this was that this area was not filled with an abundance of vegetation because until the last 10,000 years it was in the grip of a fierce ice age. [5] The only way humans could survive in such a harsh environment was through their hunting skills. As a result, their diet was derived mostly from eating both small and large animals. However, since killing large animals was both dangerous and difficult, our early European ancestors ate virtually the entire animal. They ate the brains, and all of the organs. Even the bones were discarded only after they had been thoroughly boiled, then cracked open and the high fat of the marrow was devoured. This diet, because of eating the organ meats, was loaded with all of the vitamins and essential minerals, and because of the muscle meat it had an extremely high protein and fat content. This produced a very intelligent and strong people. This is the type of diet that dominated the European continent right up until two thousand years ago when the conquering Roman Empire brought civilization and agriculture to it. [6] At that point growing grains and the milling of it into flour added a new staple to the diet, whole grain breads. However, it was only an addition, not a replacement or alteration of the meat centered diet that had existed there for tens of thousands of years.

The Ancient European Diet Comes To North America

Three hundred years ago, the descendants of the rugged individualists who had conquered the harsh European continent throughout its ice age by living on a high meat diet, came to a new continent. It was called North America. They settled on its rocky, North Eastern Coast with tremendously harsh winters and short growing seasons. Not a great deal different than their earliest ancestors from Europe had dealt with for tens of thousands of years. They survived, and eventually went on to create a great nation by relying on the same diet their ancient forebear's had; by hunting and killing the abundant animals which roamed the wilds. Then later, by growing, killing and eating cattle, hogs, turkey and chickens, with some fruits, vegetables, tubers, nuts and grains added.
The importance of this fact, is to realize that the United States was built by humans who until very, very recently, lived on a diet that was composed largely of saturated animal fat. Prior to 1920, the amount of saturated animal fat in the diet of American's was quite large, just as it had been for thousands of years before them. [7] They thrived on this diet because they had inherited a body that had actually been developed over tens of thousands of years to thrive on this large amount of saturated animal fat in the diet. The wonderful North Americans of European ancestry that built this great nation had no arterial disease, no heart disease, and no heart attacks because their body was made to operate on this high intake of saturated animal fat.

An 80 Year Old Change In Diet Has Created Heart Disease And Death

Today, these same North Americans of European ancestry are contracting arterial and heart disease by the millions. A million of them are actually dyeing from it every year. What is amazing, is that they are being told by the medical profession, that all of this heart disease and death is being caused by eating the very foods their ancestors have eaten

for tens of thousands of years. Tens of thousands of years of eating a diet high in saturated animal fats without ever having had any of these diseases affecting the heart. Stop and think about it, does this really make any sense to you? The more the American people follow the medical advice to cut down on saturated animal fats, the more they also increase their intake of refined flour and sugar laden foods to take its place. [8] Americans have allowed themselves to become so gullible in their faith in the false gods of medicine and diet, they have taken leave of their own good sense. In a state of medically instilled fat phobia and paranoia Americans have become so idiotic and stupid they are now gulping down tons of snack foods laced with Olean or Olestra an FDA approved totally synthetic and artificial fat, combined with nutrition-less sugar and white flour. [9] According to Dr. Meir J. Stampfer, the famous Harvard epidemiologist, just 3 servings of these snack foods per week will create a 10% drop in the carotene level of those consuming these foods; producing an additional 32,000 deaths per year from heart disease and cancer. [51] What in the hell is going on? Has this kind of diet totally destroyed the ability of the American people to think for themselves and see through this kind of sick deception?

The result of this new American diet is more cancer, diabetes, obesity, heart disease and death each year. As more and more modern nations adopt the American diet, they are also afflicted with the exact same diseases that are destroying this great nation. [10] No terrorist, or foreign enemy has been able to destroy America, and unless we come to our senses, they won't have to, our new diet is doing it for them.

Since a large amount of saturated animal fat has been a major part of the human diet for tens of thousands of years without heart disease, and large amounts of sugar and refined flour have only been in the diet for the past 80 years, and that is when all of the cancer, diabetes, heart disease and deaths have occurred, which seems the most likely source of the problem to you? The saturated animal fats your ancestors ate for tens of thousands of years without cancer, diabetes or heart disease; or the high refined carbohydrate diet of processed food rich in sugar and devitalized flour that correspond to the occurrence of this epidemic of "modern" diseases?

As you can plainly see, it does not take a degree in medicine or biochemistry, nor does it require the brain of a rocket scientist to see the plain and simple truth.

The Body Has Developed The Ability To Use Fat In The Diet

Just imagine for a moment that you are one of your early male ancestors out on a hunting expedition wading through the snow of a frozen forest in search of a Woolly Mammoth.

There is no McDonald's, no Burger King, or Dairy Queen to drop by for some fast food. It is intensely cold, and you have been walking for hours with no candy bars, or cookies to keep you going. Suddenly your hunting party spots a herd of Wooly Mammoths, and it is time to surround one and sink your spears into it. Where are you going to get the incredible energy, strength and stamina it is going to require in order to do this?

The answer is a word that almost strikes terror into the heart of today's Americans. It is called saturated animal fat which has been stored on your body as triglyceride deposits, known to all of us today as body fat. As a result of you and your social groups last animal kills, your meals for the last several days were loaded with saturated animal fat. In fact, your ancestors had been eating meals loaded with saturated animal fat for tens of thousands of years. Their body had developed the physiological machinery to turn it into an abundant source of energy, both for immediate use, and to be stored for later use. Through the DNA they passed on to you, your body now has that same ability.

A Brief Look At What Fat Is

Fat is not just fat. Fat is made up of building block units that are called fatty acids. These fatty acids are chains of carbon atoms to which hydrogen atoms are attached along the sides of the chain, with two oxygen atoms attached at the beginning, also known as the alpha end of the chain. There is quite a wide range in the length of the fatty acid chains. Some are quite short and some are quite long. The difference in the length of the chain changes the characteristics of the fat. If you have read very much about health in the past few years you have begun to read about short chain fatty acids, medium chain fatty acids and long chain fatty acids. Each of these different length fatty acid chains even have their own name as well as a scientific designation indicating the number of carbon atoms in the chain. Virtually no fat, whether from animal or vegetable source, is composed of only one type of fatty acid, they are always a mixture of different kinds of fatty acids, with one or two different types dominating.[11]

Unsaturated Fatty Acids

The plant kingdom produces and stores fatty acids in their seeds. These fatty acids are of the "unsaturated" variety, which means there are gaps in their chain of carbon atoms where there are no hydrogen atoms attached along the side. Some have only one gap, and these are called "mono-unsaturated" fatty acids, and olive oil is famous for it having most of its fatty acids in this form. This form of fatty acid is resistant to the rancidity of oxidization, which is why olive oil is considered safe to use in cooking.[12]

Other fatty acids have three gaps or six gaps where there are no hydrogen atoms, thus they are called partially unsaturated fatty acids. Known as the Omega 3 and Omega 6 fatty acids, you would be most familiar with this combination as found in fish oil and flax seed oils, each of which have a significant amount of these two types of unsaturated fatty acids. These partially unsaturated fatty acids are very important to the human body in the creation of good health, and especially in creating healthy blood fat profiles for the blood vessels and the heart.[13]

The Danger Of Polyunsaturated Fatty Acids

Other fatty acids have large numbers of gaps where there are no hydrogen atoms and these are known as the "polyunsaturated fatty acids". You would be most familiar with these as the polyunsaturated seed oils, especially as corn oil and safflower oil. The problem with these fatty acids is that they very rapidly combine with oxygen and quickly become rancid, even within the human body after you have eaten them.

In fact, corn oil goes rancid in the body so rapidly that when cancer researchers want to cause cancer in lab animals they feed them large amounts of corn oil.[14] Once in the oxygenated environment of body chemistry, the polyunsaturated acids in the corn oil quickly become rancid and turn into powerful and destructive super oxide free radicals. This is just a fancy way of saying they have gained a lot of extra oxygen that are carrying electron charges that will electrically zap cell structures they come in contact with. This electron zapping, alters and destroys these cell structures, which creates such destruction that the cell DNA becomes deranged and causes abnormal cells to be reproduced uncontrollably (cancer). [15] As you can see, polyunsaturated oils can be very dangerous to your health.

During the 1960's medical researchers intent on finding a way to lower cholesterol in the blood, chanced to notice that diets high is polyunsaturated oils produced animals with low blood cholesterol. In 1968 a special Task Force created a diet for humans that featured a large intake of polyunsaturated fats and they began an experimental program involving 962 people called the Heart Diet Pilot. It ran for 7 months, and it did result in a modest average lowering of the total blood cholesterol by 10.5 percent. An amount that was not sufficient to provide any benefit to the heart. In addition, the results were far from the same for everyone. Some had their cholesterol drop by only 3.8%, the vast majority had only a 5 to 6% drop, only a small minority had well over a 10% decline. [16] It soon became clear to the doctors that altering everyone's diet to include a lot of polyunsaturated fats was only going to offer a modest cholesterol lowering benefit to a very few. But that was not the worst of it. The worst result of the whole study was that an increase in polyunsaturated fats, just as with laboratory animals, resulted in an increase in the rate of cancer for those with a high polyunsaturated fat intake. [17]

In 1971 the Heart Diet Pilot Task Force published a report of their findings, concluding there was no heart benefit to the polyunsaturated fat diet, and that it posed certain possible risks due to an apparent increase in cancer. In that same year, Drs. Morton Lee Pearce and Seymour Dayton published in the Lancet, the result of the Veterans Trial in which a diet high in polyunsaturated fats was accompanied by an excess of cancer deaths.[18] Other studies of a similar nature came up with the same results. Even though the leaders of the polyunsaturated fat movement never came out with a big announcement or warning of this fact to the public, to save face, they did quietly fold their tent and stopped promoting it.

More Body Movement Requires Partially Unsaturated Fatty Acids

Unsaturated fatty acids tend to be in a liquid state. The more unsaturated they are, the colder the temperature can be while the fatty acids remain liquid. This is why cold-water fish have large amounts of the Omega 3 and 6 partially fatty acids.[19] If they had fully saturated fats in the frigid waters of the deep oceans they would become so stiff they would be unable to twist and turn in order to swim. It is interesting that wild animals, which must be agile to survive, have a certain stores, whereas sedentary domestic animals have virtually none.[20]

Even domestic cattle which roam on a free range, walking many miles a day, have a greater amount of their fatty acids that are partially unsaturated, compared to those animals which are kept in a pen and fed hay and grain where little movement is required.[21] Because what are known as cold-water fish swim deep in the ocean where it is very cold, and there is very little sunlight, and little oxygen, the exposure to highly reactive oxygen is greatly reduced. Thus they can safely have large amounts of unsaturated fats in their body. In addition these fish have a significant amount of anti-oxidant nutrients and enzymes in their tissues to guard and protect their unsaturated fatty acids from the dangers of oxygen.

Plants Protect Their Polyunsaturated Fatty Acids From Oxygen

Plants do not use oxygen in their metabolism. To the contrary, it is a byproduct of their metabolism and they get rid of it as quickly as possible by exhaling it through the pores on their leaves. Thus the fatty acids plants produce for their seeds are not in great danger from any oxygen within their tissues, such as occurs with animal bodies. When the seed is produced and the unsaturated fatty acids are concentrated in it, they are given a dose of protective antioxidant nutrients such as vitamin E to stand guard over them. Then the unsaturated fatty acids are encapsulated inside a highly oxygen resistant cellulose shell. Since plants and seeds are not required to be on the move in the same way animals are, they can have their fatty acids in a liquid form.

Saturated Fats

There are some fatty acids that have every single space along the side of their chain filled with hydrogen atoms. These are called "saturated" fatty acids because all of the links in the carbon atom chain are occupied. The advantage of saturated fatty acids is that they are not easily made rancid. This is because all of those hydrogen atoms are blocking the invasion of highly reactive oxygen, which would otherwise enter the chain and turn it rancid. Since animals have oxygen carrying red blood cells in the blood vessels and capillaries coursing through every tissue in the body, unless the fat stored on those animal bodies was mostly in the saturated form, the fat would be quickly attacked by the oxygen and made rancid. Rancid fat is biochemically unusable, and is a dangerous free

radical, carrying extra electrons.[22] Electrons that will zap and injure the tissues of the body they come in contact with. This is why animal fats are saturated fats, to protect them from going rancid and causing great harm.
There is one other important characteristic to saturated fatty acids for animal bodies. They remain semi-solid at body temperature. You can imagine how difficult and unsafe it would be for an animal that has to move quickly during fight or flight for its life, if most of its fat stores were liquid and were sloshing all around, throwing it off balance with every movement.

The Historic Nature Of Fat In The Diet

When you eat food containing the oil from nuts and seeds you are eating unsaturated fat. Your early ancestors did not eat many foods with seed and nut oils because for close to 100,000 years it was almost impossible to get enough seeds and nuts to make such oils. Only after agriculture came on the scene 10,000 years ago, did people begin to accumulate enough seeds and nuts to produce oil. Although humans have within the past 10,000 years added some seed and nut polyunsaturated oils to the diet, it has been only a tiny percent of the total diet. Which is fortunate, since in large amounts they can become quite dangerous to body chemistry. Only the monounsaturated oil of the olive and the saturated oil of the coconut and palm kernel have been safely used in large quantities by our ancestors.[23]
When you eat fat from pork lard, beef tallow, butter, cheese or the fat in and around a steak, hamburger, or baked ham, you are eating what are mostly saturated fatty acids. The same exact thing your ancestors have been eating for tens of thousands of years without diabetes or heart disease.
Now keep in mind that these are the hardy people that went through terrible times to get their DNA to you. In spite of the odds, your ancestors were not just survivors of hard times they were the winners! That is what you have in your body, the DNA of mankind's winning physiology. So stop being afraid of saturated fat in the diet, your body was very effectively designed to use it for energy.

How Your Body Extracts Fat From Your Food

When you eat food that contains fat, whether from animals, fish or foul, or from the seeds of plants, it first enters the stomach where the digestive juices containing hydrochloric acid go right to work separating the fat from the food.[24]
When that separated fat leaves the stomach and enters the first section of the small intestines, signals are sent to your pancreas and your gallbladder that fat is on the way.[25] This causes the pancreas to release an enzyme called lipase, and the gallbladder to release bile, which is a detergent catalyst that multiplies the power of the lipase to do its job by tens of times. When lipase and bile go to work on the dietary fat, they quickly break it apart into two basic structures.[26] The first one is called a triglyceride, which is three fatty acids attached to a glycerol molecule. About 40 to 50% of these will be further broken down to single fatty acids attached to a glycerol molecule and called a monoglyceride.[27]
At this point the triglycerides and monoglycerides pass into the single layer of cells that cover the walls of the tiny intestinal projections called villi. Where they go from here depends upon the length of their carbon chain. Immediately inside the villi are tiny blood capillaries. Free "short chain" fatty acids (less than 10 to 12 carbon atoms), mostly derived from butter fat are more water soluble, and are able to go directly into these tiny blood vessels. The villi capillaries feed into the portal blood system going directly to the liver, where in less than a minute the short chain fatty acids will provide fuel to energize the liver.[28]
Meanwhile inside the villi cells of the small intestines, enzymes and cofactors have created a pool of triglycericde molecules from those absorbed from the diet. Now another group of enzymes will gather several triglyceride molecules from this pool and join them to a very small amount of cholesterol, and then wrap them with a thin protein membrane into a little ball known as a chylomicron.[29]
The fatty acids in the chylomicrons are now safely protected from oxygen and could safely enter the blood stream, but they don't. Instead they enter into a totally separate system designed just to handle them. Running up the middle of the intestinal villi and surrounded by the capillaries is a tube that belongs to the lymphatic system and which is called the central lacteal. It is into these lymphatic central lacteal vessels that the chylsomicrons now pass, totally isolated from the blood.[30]
The chylomicrons are white in color, and as they fill the tiny lymph vessels of the villi, it looks like milk is flowing in them, and that is how these vessels came to be called lacteals. The lacteals are connected to a very large lymphatic tube known as the thoracic duct. It has that name because it passes upward through the thoracic cavity (chest). It is into the thoracic duct that the lacteals empty their content of chylomicrons.
Between 80 and 90% of all fat from the diet is transported to the cells and tissues of the body in this way. The thoracic duct carries these chylomicrons up through the chest and dumps them into the great jugular vein just before it enters the heart.[31]

Your Heart Gets First Chance At The Fat From Your Diet

When most people first find out that the fat from a meal, packaged up as tiny chylomicron balls, are tossed into the blood stream in great quantities at a point just before it goes into the heart, they nearly go into a state of shock. In the face of all the nonsense they have been taught about the danger of fat in the diet it seems as if the Great Creator must have made a tragic mistake to dump all that fat into the blood stream just as it enters the heart. They think "No

wonder we have fat clogged arteries in the heart." I have some important news for you. This is not where the fat that clogs arteries is coming from.

I have been studying science my entire adult life, and whether we are talking about galaxies, solar systems or human bodies, I have never yet found the Great Creator making a mistake! I can't say that about medical doctors. When medical scientists first discovered the appendix, and the tonsils, for a long, long time they did not know what they were for.

Instead of admitting their ignorance, in their unmitigated arrogance they said they were "vestigial" tissue. Parts left over from an earlier time, and now we no longer needed them. Thus, a lot of money was made in surgery removing these so called needless organs.

Then about 25 years ago it was discovered these organs were actually part of the immune system. Next it was found that the rate of cancer in the regions of the body those tissues were located in, was hundreds of percentage points higher for those who had those organs removed. Turned out they were not so "vestigial" after all. The Great Creator does not make mistakes!

There is a specific reason WHY all of this fat is dumped into the blood just before it goes to the heart. The heart needs all of that fat! Most of the energy that powers the heart muscle comes from that fat. As much as 75% of the heart's energy comes from burning fat.[32] Within just moments after entering the blood vessels feeding the heart, two enzymes in the cells that line these blood vessels begin ripping the fatty acids out of the chylomicrons and feeding them to the fat storage cells of the heart.[33] There the fatty acids are stored until the mitochondria (the energy factories of the cell, about 2,000 per heart muscle cell), needs them. They are then released from storage and the mitochondria of the heart muscle cells converts them to ATP, the form of energy that powers the ever beating fibers of the heart muscle.[34]

What The Heart Does Not Take, Goes To The Rest Of The Body

The fatty acid loaded chylomicrons that do not get diverted to the heart, continue on their trip through the other 60,000 miles of blood vessels at great speed.[35] These blood vessels pass through muscles, organs and glands with their precious cargo of fatty acid loaded chylomicrons. The blood vessels get smaller and smaller as they enter these tissues, and finally they are nothing but tiny capillaries. The walls of the capillaries are only one cell layer thick and only wide enough to allow one red blood cell at a time to pass through in single file.[36] Just as in the heart, within moments of entering the capillaries of the other organs, glands and muscles, the enzymes from the cells of the capillaries are opening the chylomicrons and removing the fatty acids, which are quickly transported into the fat storage cells of these tissues. They reside there waiting for a signal from the mitochondria within the cells of these tissues, at which time they are liberated and sent to the cells of that tissue where they are converted to ATP energy to provide the necessary energy to power that muscle, gland or organ.[37]

Depending upon which organ or muscle we are talking about, a full 60 to 75% of their energy need is met by burning these fatty acids, rather than from the glucose derived from carbohydrates.[38] Only the brain is left out of this process as it uses glucose exclusively for its energy.[39] What the cells cannot burn immediately, they store within their cells as isolated droplets of lipids sometimes referred to as liposomes.[40] This is a very small amount, and it is only an emergency supply for use when there is not enough new energy sources coming in to feed the cell. Then various enzymes mobilize the fatty acids stored within the cell and make them available to the mitochondria energy factories.[41]

Within Half An Hour Of Entering The Blood Most Of The Fatty Acids Are Gone

Following a meal in which 30 to 40% of the calories are derived from fatty acids, the amount of chylomicrons entering the blood is so great, that for a short time the arterial blood coming from the heart appears somewhat milky.[42] However, this does not last long. Within less than a minute of entering the blood the liver is gaining energy from the short chain fatty acids derived from a meal, within less than 5 minutes the energy cycle of the heart is being fed by the fatty acids brought to it by the thoracic duct, and within 10 to 15 minutes half of all the fatty acids of digestion are gone from the blood and are at work in the energy cycles of the cells.[43]

Within 20 to 60 minutes all the fatty acids from the meal are gone from the blood, and are available to provide energy to the cells and tissues of the body. The truth is, from 66% to 75% of the entire energy needs of the cells of your body are provided by burning the fatty acids derived from triglycerides. [44] Every medical physiologist in the world knows that these are the facts!

Not One Negative Word About Chylomicrons

Here is something more for you to think about. If fat in the diet is so bad for you, and it is the source of the fat in your arteries, why is it that you do not read or hear one word about chylomicrons being the cause of coronary artery disease?

After all, the only way the fat in your diet can get to the arteries of your heart is by being transported there by chylomicrons. Even the capillaries are designed to secrete the enzymes that open those chylomicrons and extract the fatty acids and transport them into the fat storage cells of each tissue, which then release them to be burned for energy. Clearly your body is designed to run on the fat in your diet. The simple reason you do not read about the danger of chylomicrons and their dangerous load of fatty acids, is because there IS NO DANGER. Your body safely

uses the fatty acids from the chylomicrons and they are NOT deposited on the wall of your arteries. Virtually all of the dietary fatty acids delivered by the chylomicrons from the diet are safely used up as a source of vital energy for the body in less than an hour after they enter the blood steam. Most of them within 20 minutes. The medical experts know this. That is why you do not hear a single negative word about the delivery system that carries the dietary fatty acids to your cells and tissues.

Fat In The Diet Is The Main Fuel Of The Body

For at least 100,000 years, dietary fat, almost all of it saturated fat from animal origin has been the main fuel to provide energy for the human body. The DNA from your ancient ancestors, who developed the anatomy and physiology to safely use this fat as their primary source of energy, is the same DNA, physiology and anatomy that you have in your body. Your body is designed to safely use dietary fat as your main source of energy!

No Evidence Of Harm

I know that it is very difficult for the average person, who is accustomed to thinking that the medical profession is based on cold hard scientific evidence, to even imagine that the medical communities obsession against eating saturated animal fats is not based on any scientific evidence whatsoever. [45] That's right, nothing, zero, zip!!!
It is even worse than that! There is a mountain of evidence that point in the opposite direction. The more carefully crafted and scientifically executed the study of diet and heart disease, the more they have repeatedly shown that saturated fat in the diet not only has no bearing on causing heart disease, or any other disease, but to the contrary contributes to greater energy, health and lower death rates.[46]
The study that started this whole thing about fat and cholesterol in the diet as a cause of heart disease, is the world famous Framingham Study. This study began in 1948 with 5,127 people from Framingham, Massachusetts. A complete medical history, dietary, and activity profile was made for each person, and they were given a complete medical examination.
This was repeated every two years for the rest of their entire life, with new people add to replace those who died as time went on. The study is ongoing and now has 50 years of history.[47]
After the study had been underway for 20 years, it was decided by those at the U.S. Government's, National Heart, Lung, and Blood Institute (NHLBI) to review the findings of the study up to that point to see if they could find some justification for their belief that something in the diet caused cholesterol in the blood to be elevated, and those with elevated cholesterol had a lot more heart disease than those who did not. The results turned out to be a huge disappointment.
There was absolutely no solid evidence of a connection! Buried away in a 1974 typewritten report that measured nearly two feet thick, and which has never published by the NHLBI, were these words of conclusion by the researchers, "There is, in short, no suggestion of any relation between diet [as measured by saturated fat and cholesterol intake] and the subsequent development of CHD [coronary heart disease] in the study group … ." [48]
In 1992, Dr. William Castelli, the Director of the Framingham Study was even more direct when he stated, "In Framingham, Massachusetts, the more saturated fat one ate, the more cholesterol one ate, the lower people's serum cholesterol was. … We found that the people who ate the most cholesterol, ate the most saturated fat, and ate the most calories, weighed the least and were the most physically active."[49]
When the anti saturated fat and cholesterol crusade was first getting underway in the 50's and 60's, America's first, and Harvard's leading cardiologist as well as President Eisenhower's personal physician protested against it. He was Dr. Paul Dudley White who stated that from 1921 through 1928 he had not seen one single case of heart attack brought to the Harvard Medical School. During a televised discussion of heart disease with fellow physicians, Dr. White stated, "Back in the myocardial-infarction-free days before 1920, the fats were butter and lard, and I think we would all benefit from that kind of diet."[50]

Heart Disease Is Not Caused By Eating Saturated Animal Fats

In spite of the fact that heart attacks were practically nonexistent prior to 1920 when the diet was rich in saturated animal fats, and since then there has been found nothing to connect their intake in the diet to heart disease, the medical establishment has set off on a "witch hunt" in an all out attempt to eradicate them from the American diet. The tragic result of the medical "authorities" willfully ignoring the facts about the true cause of heart disease has been a million deaths a year from heart disease at a cost of over 50 billion dollars a year. Fortunately for you, because this book is bringing you the facts about the true cause and correction of heart disease, you do not have to become another one of the victims of this false propaganda.
What you have just learned in this chapter is:
1. Your ancestors thrived for tens of thousands of years on a diet high in saturated animal fats and did so without heart disease.
2. You have inherited their DNA giving you the same ability to safely digest and metabolize saturated fats with no risk of heart disease.
3. Saturated fatty acids are the number one source of fuel for your heart, muscles, organs, glands and tissues.
4. There is valid scientific evidence that the partially unsaturated fatty acids known as Omega 3, derived from flax seed and fish oil are beneficial to the heart and vascular system, and should be in your diet.

5. There is valid scientific evidence that polyunsaturated fats in the diet are harmful because they lead to an elevated occurrence of cancer.
6. There is NO scientific evidence to support the idea that large amount of saturated animal fats in the diet are harmful.
7. There is abundant evidence from the 50 year long Framingham Study that significant saturated animal fats in the diet are actually highly beneficial to the overall health of the individual.

Cholesterol – Friend Or Foe?

In the next chapter we are going to examine the issue of cholesterol. You will learn where it really comes from, why you have it, and whether or not it is a threat to your heart, and if it is, just what you can do about it safely, effectively and naturally.

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Chapter Five
Winning The War On Cholesterol

With all the information that floods the media about heart disease, there is nothing that has as much misinformation floating around about it as there is about cholesterol. The reason for this misinformation is that the major institutions of health in the U.S. government, the major medical schools, hospitals, and the drug companies are giving out information about cholesterol that is totally misleading. Why? Because over thirty years ago they jumped to a wrong conclusion about cholesterol, and they have been pursing and teaching the world that totally false concept about it ever since.

For example, everyone knows that cholesterol is the same thing as fat in the blood, right? And that it comes from eating too many fatty foods, especially saturated animal fats, right?

Of course you already knew that, right? You know that, because you have been told that over and over for years. You have learned it from the information put out by the U.S. government's Institutes of Health, especially the Heart, Lung and Blood Institute, as well as major medical schools, and much vaunted articles and books by prominent doctors and greatly extolled authors. The only problem is, ALL OF THAT IS WRONG! WRONG! WRONG! And, the worst part about it is, every scientist and medical doctor who has a brain in his or her head, KNOWS it is wrong!

Another example of the misinformation floating around about cholesterol is that it causes heart attacks. You are being scared out of your mind by the cholesterol lowering drug commercials being shown every hour on prime time TV, that feature people collapsing with a heart attack, supposedly because of their high cholesterol. What they are not telling you is that MOST people who have a heart attack have a NORMAL cholesterol level in their blood. Some researchers have indicated that as few as 30% of those who have heart disease or a heart attack have truly elevated blood cholesterol. [1] This has actually been known for a long time. As far back as 1964 the Journal of the American Medical Association stated that only 20% of heart disease patients have elevated serum cholesterol levels. [2] This means that between 70 to 80 percent of those having heart attacks have normal cholesterol. Let me repeat that in case you missed it, 70 to 80 percent of people having heart attacks have cholesterol in the normal range!

Again, every medical scientist in the world knows this is true. This is not to say that cholesterol, even when supposedly in the normal range, is not aggravating the heart disease that was started by arteries that have been previously damaged by elevated levels of homocysteine. In many situations this is definitely the case, but it is not always the case. In this chapter we are going to explain exactly how and why this can occur.

However, lacking the original arterial damage created by elevated homocysteine, elevated cholesterol is not going to cause heart disease. What is the proof? All you have to do is look at the French who have a very low incidence of heart disease and heart attacks, while at the same time having a high intake of fat and cholesterol in their diet, often with elevated blood cholesterol, BUT they also have a hefty dietary intake of vitamin B-6, B-12 and Folic Acid which gives them an artery and heart protecting LOW LEVEL of homocysteine in their blood. [3]

Cholesterol Is Vitally Important To Your Health

The first thing you need to realize about cholesterol is that it is NOT a fat in the true sense of the term. It is actually a waxy food alcohol, and a steroid. While chemically speaking, cholesterol is in the alcohol family, it is not of the intoxicating variety. Cholesterol is also called a "steroid nucleus". This is because it is from cholesterol that all the important steroid hormones such as DHEA, testosterone, progesterone and estrogen are manufactured in the adrenals, the ovaries and testicles. Cholesterol is essential for the biochemistry of life to occur in virtually every cell of your body. The membrane or wall that surrounds and protects each of the cells of your body, trillions of them, all contain cholesterol. With Dr. Arthur C. Guyton listing the average cell membrane as being made up of 25% cholesterol. [4] It is there as an antioxidant to help keep dangerous free radical oxides out of the cell, and as a stable component of the cell wall structure. In fact it is so stable that radio active labeled cholesterol in the brain cells of mice has been shown to remain in place for many months without degradation or metabolic turnover. [5] It is also essential to maintain the proper water balance within the cell. Dr. Guyton estimates that were it not for the water retaining properties of cholesterol in the membrane of skin cells, that the daily water loss due to evaporation "would probably be 15 to 20 liters per day instead of the usual 300 to 400 milliliters." [6]

If the cholesterol is missing from a portion of the cell wall, the integrity of the cell's interior will be compromised. It can then lose moisture, lipids, proteins, enzymes, nutrients, and vital cell products or structures. Without sufficient cholesterol in the cell wall it can then be easily invaded by pathogenic organisms, foreign proteins, harmful chemicals and metabolic byproducts, as well as by super oxide free radicals.

Such invasions can alter cell structure, including the DNA. This destroys the cell's ability to do its job and can even allow it to turn into a cancer cell. Several studies have shown that those with low cholesterol levels have a higher incidence of cancer and a higher death rate. [7]

Another important function of cholesterol is its role in the human brain. The structure of the brain is about 78% water, with the solid matter being composed of various proteins and lipids. The lipids are of a wide variety, and 10% of them have been found to be cholesterol. Most of the cholesterol in the brain is found in the walls of brain cells, where as previously mentioned, it provides a high degree of stability and performs all of the protective functions listed in the previous paragraph.

Very Little Cholesterol Is Absorbed From The Diet

In spite of all the false propaganda about the danger of a high cholesterol diet, the truth is, you can only absorb a small percent of it. No matter how much cholesterol you eat, on average, no more than 10% of it will actually get into your body. Studies have shown that even if you reduce your dietary cholesterol intake to nearly zero, you can only reduce the cholesterol in your blood by no more than about 10%.[7]

Which, if you really have high cholesterol, a 10% reduction, is not enough to do you any good. This is why the medical profession no longer promotes cholesterol free diets as an effective means of lowering blood cholesterol. Cholesterol is too critically important to your health for the body to rely on food sources alone. Which is why your liver manufactures about 90% of your body's daily cholesterol needs.[8] One of the reasons why diet is so ineffective at lowering blood cholesterol levels is that the less cholesterol you eat, the more cholesterol your liver will make.

If Cholesterol Is So Important – How Can It Be So Bad?

As has been observed so very long ago, "A house divided against its self cannot stand." The human body is a masterpiece of design to create perfect health. It goes against every principle of Nature for the liver to manufacture and fill the blood with a lot of a substance that is harmful to the body.

Let us be clear on this point, pure cholesterol that is provided to your body by your liver is not harmful to you. Never!

However, there are three different ways where the health of your arteries can be harmed as the result of abnormal biochemistry involving cholesterol. Let's take a look at the first one. Once again this is the product of our modern food processing.

It occurs when whole milk, or whole eggs, both of which contain cholesterol, is spray dried to create powdered eggs and milk. During that process a significant amount of the milk and egg cholesterol unites with oxygen and creates a new molecule called oxy-cholesterol.[9]

Now right away I can hear you saying to yourself, "Well, at least that lets me out because I never eat powdered eggs or milk." Ah, if life were only so simple. Do you ever eat commercially prepared foods purchased in the supermarket? Such as bread, cake, cookies, crackers, snack foods and doughnuts?

Or how about those boxes that contain mixes where you just add water, stir and then cook or bake? Or perhaps you purchase bottles of salad dressing? Maybe you like those pre-made casserole dishes, boxed, or frozen? Did you ever notice that virtually all of the pre-made or packaged foods that you buy; list the ingredients as containing eggs and milk?

Guess what – over 90% of those items are made with powdered eggs and powdered milk, which contain oxy-cholesterol. The same is true for most of the meals you eat in a restaurant, they too use premixed ingredients that contain powdered milk and/or eggs. Thus you are eating a lot more oxy-cholesterol than you realize.

You are probably saying to yourself, "So what is wrong with that?" Well what is wrong with that is, that some of it is being absorbed into your blood stream. You now have rancid and damaged cholesterol in your blood stream. It is a powerful source of free radical electrons to zap the interior lining of your arteries and cause great damage. It has a high electrical attraction to all pre-existing arterial damage and will rapidly accumulate at those sites resulting in heart threatening arterial plaque build up. As Dr. McCully has so powerfully pointed out, "Oxy-cholesterol is the only kind of cholesterol that can cause artery damage." [10]

One of the great ironies is that health conscious Americans trying to avoid what they think is the harmful "high fat" foods, will deliberately increase their intake of low fat prepared foods rich in flour, sugar (devoid of the heart protective B vitamins) and high in powdered milk and eggs containing artery damaging oxy-cholesterol. Inadvertently in a deliberate attempt to escape heart disease they are eating thevery foods that promote it.[11]

The Nature Of Lipoprotein

There is no greater confusion and misinformation about cholesterol than exists with regard to its role in the lipoproteins.

You would never know it from the way the popular media refers to cholesterol, but it is important for you to understand that "lipoprotein" as in LDL or Low Density Lipoprotein, is not really "just" cholesterol at all. Lipoprotein is a combination of triglycerides, with a little cholesterol, and wrapped in protein. In reality Low Density Lipoproteins are mostly triglyceride molecules.

Cholesterol, being a wax-alcohol-steroid is not water soluble, and since the blood is mostly water, cholesterol does not mix with it and must be in some other form to move through the blood. Of course, fat and water don't mix either, so the triglycerides also have to be in some other form in order to move through the blood. We saw in the previous chapter, that when fatty acids, triglycerides, and cholesterol are absorbed from the diet into the intestines, they are then enclosed in a protein membrane to create chylomicrons. Because of their protein covering, the chylomicrons are compatible with water and can be safely transported through the blood.

When the liver manufactures cholesterol and triglycerides, it uses the same exact technique to package them up for delivery to the cells as that used by the intestines to protect trigylcerides and cholesterol absorbed from the diet by creating chylomicrons. Only this time, we don't call these units chylomicrons. When they come from the liver we call them "lipoproteins".

After the liver has manufactured some fatty acids, it first takes three of them and ties them to one molecule of glycerol and creates what is thus commonly called a tri-glyceride. Next it gathers many molecules of triglyceride and connects them to a few molecules of cholesterol. Now this combination of triglycerides and cholesterol is water phobic, and if the liver tried to send it out like this, the arteries leading from the liver would soon be clogged with the stuff.

Now, here is the really ingenious part, the liver then takes a water-soluble protein, and using it as a thin membrane it wraps the water hating triglycrides and cholesterol in it. Think of it being like those plastic shrink-wraps you see them hold a whole bunch of boxes together on a pallet when they ship stuff to stores. The protein on the outside of the lipoprotein is water-soluble and floats through the watery blood with no problem at all. The fatty acids and the cholesterol on the inside are shielded from the oxygen in the hemoglobin of the red cells in the blood and thus protected from going rancid and becoming free radicals.

Of course IF the cholesterol in the lipoprotein is one of those oxy-cholesterol molecules from our refined and processed diet, we are going to have a lot of trouble. When there are unsaturated fatty acids from our diet that are in the triglyceride molecules of the lipoprotein, the oxy-cholesterol is going to zap them, making them rancid and turning them into free radicals in the process. Now we have a highly charged free radical lipoprotein, which when it comes in contact with an arterial injury or plaque, is going to jump right in and promote the whole process.

Two Kinds Of Lipoproteins

By now, unless you have been living under a rock, you know that there are two kinds of lipoprotein. The so-called good, which goes by the name of High Density Lipoprotein (HDL), and the so-called bad, which goes by the name of Low Density Lipoprotein (LDL). You are now going to find out how and why these two different forms of lipoprotein got their respective reputations.

It has to do with the different jobs they each do, and the difference in their composition because of their different jobs.

The fundamental purpose of lipoproteins is transportation. You can think of them as being like delivery trucks. They are there to ferry triglycerides and cholesterol from the liver safely through the blood to the cells and tissues that need them, or to bring any excess back to the liver for further disposal.

Lipoproteins Made In The Liver Provide Fuel For The Body

It is the job of the Low Density Lipoprotein, the LDL to transport cholesterol and triglycerides out to the cells and tissues. What? You mean the cells and tissue need even more fatty acids and cholesterol than we get in our diet, so the liver makes even more? Yep!

In this day and age when fat is getting such a bad rap, I know it is going to come as quite a shock to you, but the cells of the heart, organs and muscles require a lot more fat for creating energy than they do blood sugar. Just to give you some idea of how much that is true, I want you to know that for energy your brain uses 70% of the body's entire supply of blood sugar! The cells of the brain do not have the ability to burn fatty acids for energy, thus they get all their energy from burning glucose. Which is why your memory and thinking ability, as well as your patience, all degenerate so quickly when your blood sugar gets low. Now you know why "other" people get so cranky when they haven't eaten for a while.

The heart, muscles and organs have to get by on only 30% of the body's glucose supply. In other words, these tissues have only a limited ability to burn glucose for energy.

However, that is not a problem for them, because they have such a great capacity to burn the fatty acids they liberate from triglycerides. In fact, the heart gets as much as 80% of its energy from burning fatty acids and the other muscles and organs are not that far behind it at 60 to 70%. Of course, if the cells have more triglycerides than they need for energy immediately, they can store them as fat, waiting for that rainy day when the triglyceride supply from the blood is inadequate.

How LDL Gets Its Name Low Density Lipoprotein

Like anyone shipping out supplies from a manufacturing plant, the liver wants to load every delivery truck as full as it can. So it masses up a huge group of triglyceride molecules, brings in a few cholesterol molecules, and then wraps the whole thing in a "thin" sheet of protein. The operative word here is "thin". The protein has to be of a special variety to allow it to be stretched a lot in order to wrap this huge lipoprotein molecule into a tight bundle for shipping through the blood. Because the protein covers a lot of territory but is very thin it is really quite light in density.

One of the reasons for this outer membrane being so thin and light in weight is that it has to be easily opened when it reaches the delivery site. A cell or tissue in desperate need for the energy to be derived from the triglycerides inside the lipoprotein delivery truck does not want to waste precious time and energy getting at it. In addition this type of finished lipoprotein package is very large because it is filled with all of those bulky but light in weight triglycerides.

Because of the light in weight protein wrap and the large amount of light in weight triglycerides in this package, it is very low in density in ratio to its size. Yep! You guessed it! That is why it is called a low-density lipoprotein.
To sum it up, low density lipoprotein has a thin lightweight protein wrap for easy disassembly, and a large amount of light-weight triglycerides, which, when all of this is computed, gives it a low density to size ratio and thus gives it, its name, low density lipoprotein, or LDL for short. The purpose of LDL is to transport triglyceride molecules to the cells and tissue to be burned for energy, or to be stored as fat, and to deliver cholesterol to those cells and tissues which require it.

LDL A Good Guy With A Weakness

So why is LDL called the "bad" guy? It is because it has a couple of weaknesses. Remember, LDL cholesterol is a truck going out from the liver to the cells and tissues to deliver a load of triglyceride and cholesterol molecules. The first problem we encounter with LDL is that some unsavory characters want to hitch a ride and tag along. We have already covered the fact that oxy-cholesterol from the diet can get incorporated into LDL and serve as a potent free radical and cause a lot of damage. Obviously the more prepared foods you have in your diet that contain oxy-cholesterol, and the higher your LDL, the more of this terrible fellow that is being transported around in your body.
Another bad guy that hitches a ride is the dreaded villain homocysteine. One of the single most damaging things about LDL is that it is a transport mechanism for carrying the arterial shredding homocysteine through the blood. The more you diet is deficient in getting those 7 servings a day of fresh fruits and vegetables, and whose diet in modern America gets anything close to that? The more likely it is that you have excess homocysteine riding along in your LDL and destroying the inner lining of your arteries. The more your diet is loaded with the B vitamin deficient processed foods containing sugar and flour, from macaroni, noodles, spaghetti and pasta (and you thought they were healthy foods) to prepared mixes, casseroles, ice cream, soda pop, candy, cookies, cakes, crackers, snack foods, most breakfast cereals, and well you get the idea, the more likely it is that you have homocysteine riding around with your LDL and tearing up your arteries and creating arterial and heart disease. The more LDL you have in your blood, the more of the bad guys it can carry around with it, and they can create some real damage.

LDL's Other Weakness

One of the other problems that we have with LDL is those words low density, which refers in large part to the protein covering or wrap. This protein is less dense, thus it is less strong, less durable than one of a higher density. This has the advantage of covering a lot of triglycerides in the LDL quite economically. It also makes it easy for the cells to open the LDL and receive the triglycerides and cholesterol it needs.
Unfortunately LDL is not the only thing in the blood. There can also be a lot of potent enzymes in the blood, as well as powerful metabolic by-products, toxins, and free radicals. All of which can attack that thin and vulnerable LDL membrane gaining easy access to the triglyceride and cholesterol molecules in there, and quickly altering them and turning them into free radicals. The damaged contents of the LDL will spill into the blood, and the newly created free radicals will damage the delicate inner lining of the blood vessels and certainly be attracted to any pre-existing arterial plaques that are already under development. The body has a defense system in place to clean all this up before too much damage is caused.
I'll discuss this in more detail later, but what happens is that when the LDL level goes up, the spillage and free radical damage exceeds the capacity of the clean up crew and major arterial damage is done and the stage is set for heart disease. An analogy is to think of all this as being like the purchasing agent that tries to save the company money by selecting a thinner shrink-wrap to hold the boxes together on a pallet during shipping. It looks really great until sharp objects come in contact with the thin shrink wrap in transit and rips the plastic open causing damage to the cartons and letting them spill all over the place. If the company is not shipping too much stuff, no big deal, the truckers grumble about picking up all the spilled boxes and the insurance can recover some of the loss. So life at the company goes on. However when the quantity of shipping goes big time, this much damage causes the freight lines to refuse to carry the pallets and the insurance company will no longer cover the losses.
The company goes out of business.
That is what happens to you and me, we also go out of business when we get too many LDL molecules floating around in our blood with too many sharp free radicals ripping them open and spilling their now toxic free radical products onto the arterial walls and creating tremendous damage. Damage that creates vascular disease and heart attacks.

How We End Up With Too Much LDL

We have already learned that ALL the fat in the diet is absorbed into the cells that cover the villi of the intestines. There they are converted to triglycerides, wrapped with cholesterol into a protein-coated ball, called a chylomicron. They in turn are shipped out via the thoracic duct of the lymph system, which dumps them into the blood stream just prior to the heart. All of this dietary fat is then delivered to the cells and tissues to be burned for energy. So you may be wondering at this point, "Hey if all the fat in the diet goes into the blood as chylomicrons and within an hour it is all in the cells and tissue of the body to be used for energy, where in the heck is the liver getting all this fat to make LDL?" You know, if you keep that kind of thinking up, we are going to put you on the TV show "Medical Detectives". The answer to that question is going to surprise you. Do you remember all those nutrition-less carbohydrates I have been complaining about since the beginning of the book? The foods made by modern humans that contain a lot of sugar and/or flour. They are the source of all that LDL. Kind of shocking isn't it? The medical

profession through the mass media had you believing that all that LDL is coming from eating saturated animal fats. That is wrong, Wrong, WRONG!
Saturated animal fats are used up long before LDL is ever manufactured.
When you eat high carbohydrate foods, from potatoes, to macaroni to candy bars, all of that starch (flour) and sugar is converted in the intestinal wall into glucose. Glucose is sugar, the simple sugar that is found in the blood. All that glucose passes directly from the intestines into the blood and goes straight to the liver. What is the liver going to do with all that glucose?
Before I answer that, I want you to be aware of the fact that for more than 99% of the history of your ancestors, their liver never had to deal with the question of what to do with all that glucose. Their body never had to deal with anything other than very scarce and very complex carbohydrates from roots, tubers, seeds, and fruits and vegetables. By the time their body stripped away the fiber, for most of them that left no more than 30 pounds of glucose for their body to handle in an entire year. By contrast, last year, the average American consumed over 300 pounds of simple carbohydrates that their body quickly converted to glucose. That is glucose at a factor 10 times greater than what 99% of their ancestor's liver ever had to deal with.
Scientists tell us there are essential fats, and there are essential proteins, but there are NO essential sugars. Meaning, that while we MUST have certain amino acids for proteins, and certain fatty acids, we do NOT need ANY sugar in our diet, because we can make all the sugar we need from fat.
Prior to the arrival of the white man and his trading post the Eskimo had proven that to be true for tens of thousands of years. They lived successfully on only fat and protein with virtually no sugar in their diet from any source.

Glucose To Fat

During the last 100,000 years or so, Europe and Asia was a very cold place, ice and snow was everywhere for most of the year. Thus our ancestors from those regions lived on a diet heavy in meat because plant life was scarce. Occasionally they would feast on carbohydrate foods when they chanced to come upon a ripe fruit tree or berry patch in season. Their body developed a special ability to handle the excess glucose that flooded their blood on those occasions. The glucose the body could not burn immediately for energy, was converted by the liver into fatty acids, formed into triglycerides, then joined with cholesterol and turned into LDL and shipped out to be stored in the fat cells. It was stored in the fat cells, so that it could be used later, during those long periods of time when there was not enough food available to meet their body's energy needs.

Post Millennium Modern America

In the post millennium era, the great vast majority of Americans have never known a long period of time where the food intake did not more than meet all their energy needs.
Which means that all that excess glucose energy from their diet that is stored as triglycerides in their fat cells will have no reason to be broken down to provide energy. Thus fat cells remain full, day after day, month after month, and year after year. This is the ONLY cause of people being over-fat.

The New Health Epidemics

There are currently two major health problems, which are afflicting so many people in America, and are increasing so rapidly, they are being called "epidemics." They are, "Type Two Diabetes" and "Obesity". The most alarming thing about them is that it is the children from ages
10 to 18, which are experiencing the most rapid increase in the number of individuals afflicted with these two conditions.
The May, 2002 issue of Pediatrics, the professional journal for medical doctors specializing in childhood health problems revealed shocking government health statistics showing that hospitalization due to complications of childhood obesity have undergone a "disturbing increase." With diabetes in this group doubling and a five fold increase in dangerous sleep apnea in the past 20 years. What is really astonishing, is that the medical and health community are attacking these two new epidemics as though they were some disease that needed to be stamped out with massive medical intervention. This is truly amazing, since scientists have known for decades that both of these health problems have the same cause, too many simple carbohydrate foods in the diet.
One does not have to be a medical genius to see why these problems have reached epidemic proportions. All one needs to do is observe the diet of today's children. It is laced with refined carbohydrate foods from toddler years on, from dawn to bedtime, day after day without let up, and then weekend and holiday carbohydrate feasts are thrown in on top of it. Their pancreas and their liver are being asked to cope with an amount of carbohydrate so much greater than their body is designed to handle, that their energy systems are collapsing under the load.
Diabetes and obesity are the natural outcome of body energy systems that are breaking down from trying to cope with at least 10 times more simple carbohydrate than their body was designed to deal with. This is the ONLY cause of these two health epidemics, and eventually this will become public knowledge. Just remember that you read it here first.
Heart disease in all its many forms and miseries always accompanies diabetes and obesity. The amount of homocysteine, oxy-cholesterol, free radicals, glucose, triglycerides and LDL flooding the blood with these kinds of health problems rises higher and higher, increasing with every passing year.
Those on a diet high in refined carbohydrate are walking time bombs for the development of degenerative diseases of all types.

High blood pressure, heart failure, heart disease, heart attacks and strokes, formerly thought of as “old folks” illnesses, are now the heritage of the young and restless members of the refined carbohydrate generation. Unless this dietary refined carbohydrate madness is halted, you can be sure that physicians and drug companies dealing with heart disease will have plenty of business with enormous profits racked up for decades to come.

The Illusion That Fat Makes Fat

One of the great illusions that permeates the media and consciousness of the general public is the notion that eating fats makes your body get fat. However, as we have seen earlier, the fat in the diet goes directly to provide energy for muscles, organs and glands. It is eating large amounts of food made from mostly sugar and flour or combinations thereof that makes us fat. Our digestion efficiently turns these foods into glucose, which quickly enters into the blood.

Keep in mind that the brain uses 70% of the daily need for glucose, its only fuel. On the other hand, the organs, glands and muscles burn fatty acids for about 70% of their energy needs. Their ability to burn glucose is highly limited, and no matter how much glucose we supply these tissues, they will less than half as much glucose as the brain. The daily amount of glucose flooding the body of the average American vastly exceeds the limited ability we have inherited to burn it for energy in the muscles, organs and glands. As a result, the glucose level in the blood rises to a level that is too high for good health, and in an effort to keep us from becoming diabetic, the liver then turns this excess glucose into fatty acids, then triglyceride, and then LDL, and sends it out to be stored in the fat cells of the body. This is the cause of obesity, and every medical physiologist in the world knows it.

How To Make A Fat Pig

When it comes to digestive anatomy and physiology as well as metabolism, the pig is very much like the human. They have teeth that are more like ours than just about any other animal. This is because like us, they are omnivores, that is, they can eat just about anything and thus they have teeth allowing them to do that. They have a stomach like ours, and they make the same kind of digestive juices we do. They even have a liver, pancreas and intestines like ours. Some people even think we have similar manners.

Suppose that you are a hog farmer, when you take them to market, they pay you according to how much they weight.

You can see that the faster you can get these pigs to weigh the most, the more money you are going to earn off of their sale.

So, if eating fat, makes animals fat, then you should feed them fat. Right? While that might currently be the politically correct answer, it is the wrong one.

Hog farmers learned a long time ago that if they feed their hogs fat in any form, they do not get fat. Here is why. Fat makes the stomach feel full, it takes a long time to empty the stomach with a lot of fat in it, and this sends messages to the brain that creates a feeling known as “satiation”. When that message of satiation comes down from the brain, the hog will quit eating and go over and lie down and go to sleep for a long time. The hogs stay trim and slim. They do not get fat. This is not the way to run a hog farm for profit.

On the other hand, if the hog grower feeds the hogs grain, such as corn, which is over 90% carbohydrate, since the stomach is not involved in carbohydrate digestion, it empties almost as fast as the hog eats the corn. The result is, the hog does not get messages of satiation from the brain and so it keeps on eating, and eating and eating. In the intestines, the hog like us, is converting all that carbohydrate into glucose and it is flooding the bloodstream. The glucose level of the blood soon rises to unhealthy levels. and like us, their liver starts converting the excess glucose into fatty acids, assembles them into trigycerides and sends them out as LDL to be stored in the fat cells. Since the hog is kept in a small pen, it cannot get any exercise to burn off that stored energy, thus it gets fatter and fatter. That is how you make profits as a hog farmer.

Conversely wild hogs are not on a high carbohydrate diet, and they never get fat. So fat hogs are not the result of their genes, and it is not the result of fat in their diet. It is the direct result of a high carbohydrate diet that causes their body to produce fat, and the same is true for humans.

Americans eating a carbohydrate rich diet is making a fortune for the refined carbohydrate (sugar and flour) as well as the processed food industries. But like the hogs, it is making

Americans fatter and fatter. It is also making huge profits for the hospitals, medical doctors and drug companies for heart disease and other severe health problems that come from this diet.

At this point you might rightly ask, “If the carbohydrate rich diet makes pigs so fat, and it is doing so much damage to the health of humans causing diabetes, and heart disease, why doesn’t it do this to the hogs?” I have a secret for you, just ask any farm veterinarian about it, and they will tell you, “It does!” The reason it is not a problem for the farmer is that he sells the hogs when they are just a few months old. They are still young enough that the harmful effects of such a diet have not yet caught up with them. Older hogs do have fat in their arteries from this diet, and they have heart attacks just like humans do once they reach a comparable age to when the effects of this diet shows up in humans.

A Look At The Scientific Statements On This Subject

Since the American public has been so thoroughly educated that triglycerides and fat on the body come from eating

fat in the diet, I know that what I have just presented to you in the previous paragraphs about carbohydrate as the source of triglycerides and fat, that you are finding it difficult to believe it could be true. What you are now going to find equally amazing, is that every medical scientist knows it is true. They were actually taught this in their medical textbooks. To demonstrate this, I am going to present direct quotations from two authoritative scientific texts that will clearly show this is the case.

In the medical book Review of Physiological Chemistry in the chapter entitled Regulation of Carbohydrate and Lipid Metabolism we find these words by Dr. Peter A. Mayes, Professor of Biochemistry at the University of London, "That animals may be *fattened on a predominantly carbohydrate diet demonstrates the ease of conversion of carbohydrate into fat.* — The process of lipogenesis is concerned with *the conversion of glucose* and intermediates such as pyruvate and actetyl-Co A *into fat* — Thus ***the rate is high*** in the well-fed animal, whose diet contains a ***high proportion of carbohydrate.***

It is ***depressed*** under conditions of restricted caloric intake, on a ***high-fat*** diet, or when there is a deficiency of insulin, as in diabetes mellitus."(emphasis added)

From the authoritative 27th Edition of Dorland's Medical Dictionary we find the following definition: "triglyceride (triglis'er-id) a compound consisting of three molecules of fatty acid esterfied [joined] to glycerol; it is a neutral fat ***synthesized from carbohydrates*** for storage in animal adipose [fat] cells."(emphasis added)

We can clearly see that it is a long established and well recognized fact by the scientific community that the process of creating fat (lipogenesis) on the body of animals, including that of humans, is based on the ease with which the liver is able to create triglyceride (fat) molecules from carbohydrate foods. However, totally contrary to what you have been lead to believe, this ability to create fat on the animal body is depressed when the animal is on a high fat diet. ***These are the scientific facts***, and yet, for the sake of financial and commercial gain, the food and medical industry are leading the American public to believe the exact opposite is the case.

In short, you are being lied to about what causes obesity and the fat build up in the arteries that leads to heart attacks and strokes. Do not allow yourself to be deceived, a diet that is high in carbohydrate (foods containing substantial amounts of flour and/or sugar) will cause you to become obese, create diabetes and develop heart problems. On the other hand, a diet with a substantial amount of saturated animal fat will cause you to eat less food, eliminate the craving for sweets, prevent the process of fat creation and storage on your body, and virtually eliminate the risk of developing diabetes and heart disease.

Calories Don't Count!

A little over half a century ago there was a fat little schoolboy, who desperately wanted to be as slim and as athletic as the other boys in his class. By the time he was in high school, desperate to be popular, at his own urging, his mother took him to doctors who put him on special diets. All they did was make him miserable and still he gained weight. He went on to college and eventually became a medical doctor specializing in obesity (bariatrics) so he could find out why he was so fat. He tried diet, after diet, and even with all of his medical training, still he could not find the answer.

Eventually at a medical conference he met another doctor, who like himself had never pursued a girl simply because his fatness made him feel inadequate. Together they decided to find the answer as to why they were fat and what to do about it. They went on a two-week vacation where they stayed in the same room so they could keep track of what they each other ate so there could be no cheating, and they recorded everything!

As a result of that study he discovered that it was not how much they ate, but what they ate that caused he and his fellow doctor to gain weight. Up till that time he had followed the conventional wisdom of the medical profession that it was an excess number of calories which people consumed that made them fat. However, what he learned was that while a total of too many calories could contribute to the problem, far more important was where the calories came from. He found that calories from fat and protein, even when as high as a total of 3,000 for the day, did not cause him to gain weight. On the other hand, even on only 1,500 calories total for the day, less than half the amount from protein and fat, if they were from carbohydrates, would cause him to gain weight.

As a result of this discovery, Dr. Herman Taller was able to accomplish a life long dream. He was able to design a diet based on protein and fat, and eliminated all forms of refined carbohydrates. He as was able to burn off the excess pounds he had accumulated from childhood on, and created a rich personal life and the successful career he had desired. He then wrote a book detailing his discovery, which he entitled "Calories Don't Count!" It was this book, long out of print, that first made me aware of the fact, that while 100 calories of energy from fat, protein and carbohydrate are equal, they are not used by the body in an equal manner.

Why Dr. Taller Was Right!

It would be several more years before I would read the discovery of cardiologist Dr. Robert C. Atkins that a high protein diet was not only an effective means of reducing the risk of heart attack, but also of shedding unwanted pounds of body fat. His findings agreed completely with those of Dr. Taller. Listed below are the physiological reasons why these two great doctors are correct. Very little protein in the diet is converted to energy, and virtually none is made into fat. Protein is too valuable as a raw material from which to manufacture enzymes, hormones, neurotransmitters, and for building and repairing the tissues of the body, to be wasted on mere energy needs. Therefore, even though a protein may have 100 calories of energy in it, the body will not use it for the

purpose of making energy or storing it as fat. What is more, if the body is forced to use protein to create energy, which it only does during times of starvation, it will be forced to spend more than 5 times as much energy to convert it to energy as it would to convert sugar or fat to energy.

Virtually all the fat in the diet is burned for energy because that is the most efficient thing the body can do with it. It is so efficient at converting fat to energy, that out of 100 calories of fat, 96% of it will go directly to fuel the energy needs of the heart and the other muscles, as well as the organs and glands. Ordinarily, very little, if any at all, of the calories from fat will be left over to be stored as fat.

This leaves carbohydrates, which are all converted to glucose in the intestines and floods into the blood. Only the brain is in immediate need of glucose from the blood to burn as energy, all the other tissues are easily burning fat for energy.

However in order for the tissues other than the brain to be able to burn glucose for energy there must be sufficient insulin present along with a host of co-factors to make this possible. In addition, the mitochondria of the cells have a limited rate at which they can convert glucose to energy, and when that is exceeded, which is quite easy on today's refined carbohydrate rich diets, the excess glucose is converted by the liver to triglycerides and then turned into LDL and placed in the adipose tissue as body fat stores. Thus 100 calories of glucose can easily be in excess of the body's glucose to energy conversion capabilities at that time, and all of them can end up being converted to fatty acids, then triglyceride, then transported as LDL and finally stored as body fat.

So you can see that while 100 calories of protein, fat or carbohydrate may all technically contain the same amount of energy, it is a completely false concept that they are all equal in their contribution to either the production of energy or the accumulation of body fat. That is simply because they are each used by the body in their own very different and quite unique ways.

What About Studies That Show Dietary Fat Is Bad For You?

In the field of science it is well known that what a study does is produce a lot of data. In other words, it produces a lot of details and facts. However, what a study does not give you is information. That does not occur until the data and the facts are correctly interpreted. There have been many occasions when studies have been completed and the first analysis of the data was wrongly interpreted. Then later analysis of the data proved that what the study really established was the exact opposite of the original interpretation.

Dr. Ancel Keys was a famous nutritional researcher who, after World War II examined the relationship of diet to disease in various countries of the world. He used the data on diet and disease that had been compiled by the World Health Organization. They had data on 20 nations and so Keys decided to reduce the size of the playing field by using only the data from seven countries.

If you stop to think about it for just a moment, you will quickly realize that if you pick one group of 7 countries you are going to come up with a whole different set of data than if you pick a different group of 7 countries. What Keys did was select a group of countries where about half had a low incidence of heart disease and the other group had a high incidence of heart disease. Then he looked at the difference in their diets, and found that those who had the most heart disease consumed the most saturated fat in the diet. From this data, he jumped to a conclusion that the fat in the diet was the cause of the heart disease, and without closer examination the medical profession hastily agreed with him and committed themselves to an anti saturated fat campaign.

Unfortunately Keys and the medical leaders who endorsed his conclusion were completely wrong in their interpretation of the data. That was 50 years ago, and they have never taken the time or trouble to re-examine their conclusions and see the error of their ways. As a result they are still going down the wrong road with increasingly more tragic results every year.

What they failed to note was that the nations with the highest amount of heart disease also had the highest amount of refined carbohydrate food in their diet. They also failed to observe that those nations with low rates for heart disease consumed very little refined carbohydrate. Rather than recognize there is something seriously wrong with their analysis in their conceit and arrogance the scientists have even resorted to calling France a "paradox" because they have very little heart disease and consume a large amount of saturated fat. What they have failed to note (or perhaps admit) is that

France, like every other country with a low heart disease rate, has a very low intake of refined carbohydrate foods.

If you examine all the diet and health statistics currently available from the World Health Organization, you will find that without exception, every single nation that has a high intake of refined carbohydrate foods has a larger amount of heart disease than those nations that have a low intake of refined carbohydrate foods in the diet. On the other hand, you can find many nations, which have a high percentage of their diet as saturated animal fats and yet they have a very low rate of heart disease, however none of them have a high intake of refined carbohydrate foods in their diet along with it.

Every nation which had a low incidence of heart disease half a century ago that has experienced a rapid rise in heart disease since that time, is a nation which 50 years ago consumed very little refined carbohydrate food, but in the intervening years has gradually added more and more of the typical American style refined carbohydrate foods, and with that, their heart disease rate has increased in direct proportion.

Every single study that singles out high saturated fat in the diet, as the cause of heart disease, is flawed and bogus!

This is because those studies have a secret component of that nations dietary makeup that is being ignored. It is being hidden from the public by not being mentioned. That hidden and ignored factor is a high intake of refined carbohydrate food, and that is the real cause of the heart disease! In some cases the scientists conducting these studies will admit that a combination of high refined carbohydrates along with a high fat diet results in a high incidence of heart disease, but in every instance they deliberately point to the high fat component as the cause, and ignore all the evidence that nation after nation with high fat in the diet without high refined carbohydrate have a low instance of heart disease. The scientists, who are revealing only part of the truth in these studies, are betraying the very meaning of the word "science" which is supposed to signify the "search for truth".

The Two Pronged Attack That Causes Heart Disease

It should be clear to you by now that the reason for heart disease is a diet that is deficient in a sufficient amount of certain B vitamins and co-factors that leads to elevated homosysteine, this in combination with the consumption of a large amount of refined carbohydrates is what causes an increase in LDL. This combination results in damage to the inner lining of the arteries by the homocysteine and the laying down on top of this injury, a fatty build up from the free radical prone triglycerides and cholesterol, which are released at too high a rate from an excessive amount of LDL in the blood.

How Elevated LDL Contributes To Arterial and Heart Disease

As you have already learned in this chapter, the role of LDL is to transport the triglyceride and cholesterol molecules from the liver where they are manufactured, out to the cells and tissues where they will be used. This of course is a very important and positive function because the cells and tissues need the triglyceride molecules to burn for energy, and the cholesterol to stabilize the cell wall membrane, as well as become a raw material in some cells for the production of important hormones.

Normally the LDL molecules are only opened at the appropriate sites along the arterial walls. There the arterial cells are sending chemical docking signals and enzymes, which open the protein membrane of the LDL. This allows the liberation of triglyceride and cholesterol molecules to be transported directly and safely from the LDL into the cells and tissues where they will be used.

Unfortunately, on our modern diet, things don't always work like this. The reason for this is that with this kind of diet, our blood stream now contains substances that are potentially harmful to the LDL transport molecule and its contents. Some of these substances can cause the thin protein covering of the LDL molecule to rupture and open prematurely. Thus causing the triglyceride and cholesterol molecules to spill directly into the blood stream instead of being released at the appropriate docking site of the cells. When this occurs, the triglyceride and cholesterol molecules float unprotected into the blood.

In this free state they are readily available to be attracted to, and then bound into, the site of any injury along the arterial wall that had been created by homocysteine. This attraction to the site of the injury is created by biochemcials being released from the site of the injury that are actually pulling the triglyceride and cholesterol molecules into the injury. This is why the plaques that build up at the site of an arterial injury created by excess homocysteine, always contains large amounts of fat (composed of triglyceride molecules) and cholesterol.

Obviously, the fewer LDL molecules there are in the blood, the fewer there will be that can get ripped open and spill their triglyceride and cholesterol contents into the blood stream. Conversely the more elevated the LDL level is, the more of these molecules there are to be torn open and thus the more free triglyceride and cholesterol molecules there will be that are available as raw materials to serve as building materials to enlarge the plaques. This is the reason why it is important to keep the LDL level from getting too high.

Once you begin to understand this process, you realize that the fat and cholesterol in the blood do not "cause" the plaque, they merely add to the plaque that was first created by the injury. However, if there is an elevated level of homocysteine, which results in a substantial amount of injury to the lining of the arteries, along with elevated LDL levels to provide an abundant supply of fat and cholesterol to those injury sites, then you have a lethal two-pronged combination that leads to arterial and heart disease.

Why Elevated LDL Does Not Always Result In Artery And Heart Disease

Some people can have very elevated levels of LDL and still be relatively free of arterial plaques and are at no real risk of developing heart disease or having a heart attack. This is because these people have very low levels of homocysteine, and hence have very few sites of arterial injury to cause plaques to form. Thus, the first line of defense against arterial and heart disease is to keep your nutritional intake high of those vitamins and co-factors that keep homocysteine levels low in your body.

There is also another reason why people can have elevated levels of LDL and still have relatively little arterial plaque or heart disease. It is because they have a high level of the "good guy" known as High Density Lipoprotein or HDL for short.

Earlier I told you that we have two different protective mechanisms built into our body that try to protect us from molecules of triglyceride and cholesterol that have spilled into the blood. One of them is the HDL molecule and the

other is a member of our immune system that is a special cell known as the Macrophage. I am going to explain the protective role of the macrophage first, because it is our first line of defense.

How The Macrophages Both Protect And Aggravate Arterial Disease

Our immune system is made up of an army of highly specialized cells, which we know in general terms as the white blood cells. There are billions of these and they come in several different varieties, each of which serves a distinct and specialized purpose. The one we are most interested in at the moment is known as a macrophage. Its name tells it all! Quite literally the name means "big eater". The job of the macrophage is to patrol the tissues of the body looking for any foreign material that does not belong there. When it spots it, be it a bacteria, a virus, a parasite, a cancer cell, left over parts of dead cells, or any other debris, if it does not belong there, or is out of place, the macrophage eats it.

Each macrophage can normally eat ten to one hundred or so virus, bacteria, or pieces of debris before it has reached its capacity. When it is full it migrates through the tissues over to the nearest lymphatic vessel where it enters with its pathological load and promptly dies. When we have a major health problem and the macrophages are doing their job and dying by the millions in our defense, they become so numerous in the lymph system they quite literally clog up the system, causing the lymph nodes to swell.

When we have high levels of LDL in our blood and they rupture and spill their triglyceride and cholesterol content at the site of homocysteine induced arterial injuries, it is the macrophages, which rush to the site and go to work clearing the site of the trigylcerides and cholesterol molecules. The body does not want this plaque to form there and impeded the flow of blood, and the macrophage does the best it can to clear the injury site from a build up of triglyceride and cholesterol.

This process works wonderfully well when the level of homocysteine is low and there are few arterial injuries, or when the LDL is low and the HDL is high and there is very little triglyceride and cholesterol deposited at the arterial injury sites. In other words, when the body is on the normal natural diet humans have been on for tens of thousands of years, this protective process of the immune system works just like it has been developed to do. It keeps our arteries clean and clear.

However, when we switch to a diet high in refined carbohydrates and the homocysteine suppressing nutrients become deficient and the LDL level rises to a high level at the same time, arterial injuries occur by the thousands, and triglyceride and cholesterol molecules fill the injury sites in abundance.

The macrophages move in and begin their feast, and as they gorge themselves on triglyceride and cholesterol molecules they swell and bulge until they become so large that as they try to leave through the walls of the arteries, they get stuck in the very mess they were trying to clean up. Now, instead of cleaning up the mess, they become part of it.

When scientists first studied arterial plaques and they spotted these cells, they appeared to be filled with bubbles, and so they called them "foam cells". The more they examined the content of these cells they discovered that what they had first thought were bubbles, were in reality molecules of triglyceride and cholesterol trapped within these cells. For many years they thought these so called "foam cells" were a major factor in causing the formation of plaques. Only recently have they found that foam cells are really macrophages which have become so filled with cholesterol and triglyceride molecules in an attempt to clear the arterial injury site of this material that did not belong there, that they ended up getting trapped at the site, and becoming a part of the problem.

A problem that only occurs when the LDL is excessively high, and the other half of the clearing team, the HDL is inadequate to do its job.

High Density Lipoprotein – How HDL The "Good Guy" Saves The Day!

Like LDL, HDL is a transport molecule for moving triglyceride and cholesterol molecules safely through the blood stream. There are two major differences in these two types of transport molecules. First is the difference in their construction, which is the source of the difference in their names. Just as Low Density Lipoprotein gets its name from the fact that it has a light density protein coat and a huge amount of lightweight triglyceride molecules in its cargo hold, the opposite is true for HDL. It has relatively few triglyceride molecules in its cargo hold as compared to LDL, and it has a heavier and denser protein wrap. Thus relatively speaking, this transport molecule has a higher density of size to weight ratio, and is therefore called High Density Lipoprotein of HDL.

The second difference is that while LDL is going out from the liver with its cargo load, the HDL is picking up free triglyceride and cholesterol molecules that have spilled into the blood instead of making it into a cell where it can be used, and then transports its cargo load back to the liver where these triglyceride and cholesterol molecules can be safely, constructively and appropriately dealt with.

If you stop to think about this for just a moment you will realize that if you have enough HDL in your blood to clear free triglyceride and cholesterol molecules that are spilled into the blood by damaged or inefficient LDL molecules, there will not be enough free triglyceride or cholesterol left to build up at the site of arterial injuries to create artery or heart disease.

In other words, your body has been efficiently designed, so that when it has enough of the right things in it, it can

protect you from developing arterial and heart disease. It only makes sense doesn't it, that since we have had triglyceride and cholesterol molecules in our body and blood since humans began to exist, and these molecules are desperately needed, that a natural system such as this would have been developed to safely and effectively use them. Study after study has been done on the blood profile of LDL and HDL in people from various nations and societies all over the world, and every one of them has shown that elevated levels of HDL is protective against arterial and heart disease. This is in spite of all other confounding factors such as smoking, obesity, and high levels of LDL. High HDL relative to LDL, is more protective against arterial and heart disease than any other thing except low levels of homocysteine.

When you combine a high HDL level with a low level of homocysteine, **you do not** develop arterial plaques or heart disease! It is as simple as that!

The Simple Solution No One Wants To Follow

The basic cause of arterial and heart disease is the excessive consumption of high amounts of refined and processed foods, and specifically sugar and flour and the foods that contain significant amounts of them. This is because these foods lack the B vitamins and many co-factors required to keep homocysteine levels very low, and they also cause to form large amounts of LDL, while at the same time not providing the liver the elements needed by the liver to manufacture adequate amounts of the protective HDL.

The solution is as simple as the cause. Eliminate the refined and processed foods containing significant amounts of sugar and flour from the diet. Unfortunately most Americans would sooner die from the complications of obesity, diabetes, and arterial and heart disease than to give up their excessive consumption of soda pop (now the nation's top beverage), ice cream, candy, cookies, cake, doughnuts and on and on the list goes of these disease and death producing foods.

Nutritional Supplements Can Make A Big Difference

Our early ancestors did not have our modern refined high carbohydrate diet and they did not have the deadly problems of obesity, diabetes and arterial and heart disease that we do.

We don't have to go back to a cave-man diet to eliminate these problems. All we have to do is follow a diet as close to what our ancestors did before the year 1900 when most of what they ate came directly from Nature with a minimum of alteration, and there was virtually no heart disease or attacks.

Science is a two edged sword. The harm the science of food refining has brought to us has also given us a growing knowledge and understanding of what causes arterial and heart disease as well as obesity and diabetes and how we control our diet to prevent them. In addition science has also given us nutritional supplements that can, in large measure, replace what has been lost in the food refining process. Thanks to very recent scientific breakthroughs we can now take nutritional supplements that will quickly and safely drop our homocysteine level, lower our LDL to a healthy level and raise our HDL to an artery and heart protecting degree.

In the next chapter, I will reveal some amazing, newly available nutrients, which can work wonders on lipoprotein levels. They will lower the dangerous LDL and raise the HDL to a heart-protecting amount. What is really wonderful about these nutrients is that when compared to the current crop of dangerous and ineffective drugs, they are very inexpensive, and they have no adverse side effects. On top of their safety and economy, these nutrients work effectively and efficiently to do the job very quickly. If you or a loved one has had a heart attack, or are at risk for having one, this next chapter is must reading for you!

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Chapter Six
The Nutritional Magic That Creates Heart Protecting Cholesterol And Lipoprotein Levels Quickly And Easily

The Nature Of The Problem

As I have pointed out in this book, elevated low density lipoprotein (LDL Cholesterol) is not the cause of heart disease.

The real cause is arterial lesions, which are injuries to the inner lining of the arterial walls. These injuries are created to the largest extent by elevated blood homocysteine levels. This results from diets high in refined foods that are filled with sugar and flour. Such a diet lacks sufficient folic acid, as well as vitamins B-6 and B-12, which are needed to prevent the creation of homocysteine.

When this problem occurs and there is not enough HDL to protect the arteries, elevated LDL causes these arterial lesions to grow into dangerous plaques by filling them with triglycerides (fat) and cholesterol particles. These plaques reduce blood flow to the heart, as well as to other organs and tissues, this is known medically as ischemia. Large plaques can break lose and form clots resulting in heart attacks and strokes. Therefore, obtaining and maintaining healthy ratios of the lipoproteins is an important factor in creating a healthy heart. This fact was not lost on the drug companies who early on began developing their cholesterol-lowering drugs.

Why Drugs Are Not The Solution

Sounds good doesn't it? Got a problem, just take a drug and fix it. Unfortunately human biochemistry is so complex that it is actually very rare for a drug to be able to work within this complexity without eventually making things even worse.

This is the case with the drugs that have been designed to lower cholesterol. The latest, and supposedly the greatest, are what are known as the Statin class of drugs. They work by blocking HMG-CoA reductase, which is one of the key enzymes in the liver that is responsible for the creation of LDL cholesterol. By blocking this enzyme the liver makes less LDL and in time the blood level of LDL goes down.

One of the problems with this approach is that it does nothing to raise the HDL, the lipoprotein you need to protect

your heart by reducing the size of the plaques. This means you are still vulnerable to having a heart attack or stroke, and this is why the ads for these drugs state that taking these drugs may not reduce your risk of death or of having a heart attack.

Worse still is the fact that these drugs also appear to interfere with other absolutely essential enzymes that your body needs in order to be healthy. One of these is Co-enzyme Q-10 (CoQ-10), which is vital to every cell of your body in the energy creation process. It is absolutely essential in order for your cells to burn fat for energy.

Several studies have shown that the statin drugs' interfere with the body's ability to utilize this vital energy-creating enzyme. Dr. Karl Folkers at the University of Texas in Austin is known as the "father of CoQ-10 research" because of his pioneering and extensive study of this nutrient. In 1990 he published the results of a study he and his colleagues did, and the title of that report tells what they found, "Lovastatin Decreases Coenzyme Q Levels In Humans."[1]

There are two types of statin drugs, one is known as lipophilic, which means that it is absorbed into the oil and fat molecules of the body. Using Lovastatin, a lipophilic form of the drug, researchers in Germany found that when given to a genetic strain of hamsters that spontaneously develop heart failure, their survival rate dropped from 89 to 30 days. [2] In Japan, researchers found that when Lovastatin was given to dogs, it decreased the production of ATP in their heart and produced "stunning" of the heart. ATP is the energy molecule required to power the beating of the heart, and its reduction leads to heart failure. The cells of the heart each contains about 2,000 energy factories called mitochondria that require CoQ-10 for the transport of electrons in the creation of ATP. The statin drugs' interference with this action by Co Q-10 resulted in a loss of sufficient ATP for the heart of the dogs to contract as completely as they needed to do. Medically this is known as a "stunning" of the heart.

When there is reduced blood-flow to the human heart, known medically as ischemia, this results in less CoQ-10 being delivered to the mitochondria energy factories of the heart muscle. Less CoQ-10 means less ATP can be produced in the heart muscle, which in turn reduces the strength of the heart beat. A "stunning" of the heart takes place and congestive heart failure develops. It is very worrisome to knowledgeable doctors that in the long run, taking lipophilic statin drugs may lead to the development of congestive heart failure and "stunning", since this is believed to result in an increased death rate.[3]

In a study done with 80 human patients who had high levels of LDL Cholesterol who were given a statin drug, it was found that a specific measure of mitochondrial function known as the lactate/pyruvate ratio, became significantly out of balance. This indicated serious mitochondrial dysfunction and the loss of ATP production. Thus, just as in the dog, the use of the statin drugs in humans appears to reduce the ability of the heart muscle's mitochondria to use CoQ-10. Over time this would result in a significant loss of the hearts ability to contract sufficiently, leading to congestive heart failure. [4]

It appears that the longer you take these drugs, the more deficient your body becomes in its ability to utilize CoQ-10. Since CoQ-l0 is required by the cell's mitochondria to burn fat for energy, the longer you take statin drugs, the more the ability of your cells to burn fat for energy, may be reduced. If you don't burn fat for energy, your body has to store it. Government health authorities keep telling us that obesity is one of the fastest growing problems in America. Anything which interferes with the ability of CoQ-10 to facilitate the fat burning process will contribute to the development of obesity, and since most people who develop heart problems already have an excess fat problem, the use of a statin drug may make their over-fat condition even worse.

You also want to remember that the heart gets as much as 80% of its energy from burning fat. There are over 2,000 energy-producing organelles called mitochondria in every heart cell. Each mitochondria requires an adequate amount of CoQ-10 being available in order for them to convert fat into ATP energy molecules. This is the energy that is required to power the heartbeat. If you deprive the heart of the ability to make or utilize enough CoQ-10, it soon loses the ability to create energy from fat. As a result the heart loses its muscle strength and fails to contract strongly enough to send the blood throughout the entire body. It is called "congestive heart failure".

The fastest growing heart health problem in this nation today is the *growing epidemic of congestive heart failure.* While it is true there are several possible causes for the condition, it is also true that the epidemic growth of this condition coincides directly with the growing use of the statin class of cholesterol lowering drugs.

The Importance Of Co Q-10 To The Heart

Studies have shown that there is a direct correlation between the tissue levels of CoQ-10 and life expectancy. Those animals that have the most CoQ-10 have the longest life span. [5] When we are young, we have a lot of it, which is one of the reasons we have so much energy when we are young. However as we age, we have less and less, and this is one of the reasons why we have less and less energy as we age. In every animal studied it has been found that regardless of the age of the animal, when tissue levels of CoQ-10 drop below 25% of what they were when they were young, they die.[6] This makes it abundantly clear that CoQ-l0 is vital to your health and you don't want to take anything into your body that will reduce the amount you have.

Just to be sure that you understand how important CoQl0 is to your life, I want to share with you the results of a study done by Dr. Emile Bliznakov and his associates. An experiment was done with laboratory mice whose life span ranges from 16 to 18 months, which is equivalent to 65 to 75 years in humans. They took 100 healthy mice in this age category and divided them into two groups of 50 mice each. Then they fed both groups the same very nutritious food.

However, they gave a weekly injection of CoQ-l0 to one group of mice and nothing additional to the "control" group. At week 28 of the experiment 70 percent of the mice in the control group had died of age related natural causes, whereas, only 40 percent of the mice getting CoQ-10 had died. By week 36 *all* of the mice not getting the CoQ-10 had died. However, 40 percent of those getting CoQ-l0 were *still alive*. Not only were they alive but, they had full and lustrous coats, and were bright, alert and active. The last of the mice getting the CoQ- 10 died in the 80th week, which was equivalent to a human living to be 150 years of age. The mean life span of the ordinary mice was 20 weeks, the mean for those getting CoQ-10 was 31.2 weeks, an increase in the life span of the average mouse by just over 50 percent. [7] Taking any kind of drug that reduces your body's ability to produce or utilize CoQ-10 is going to reduce your lifespan. Not exactly what most of us have in mind.

You will also notice that the ads for these cholesterol lowering satin drugs warn that there is a strong possibility they can cause serious and permanent damage to the liver and or the kidneys. This is so critical that if you take these drugs, you must be carefully monitored by a doctor, with regular blood tests to determine if damage to the liver or kidneys has begun. Then the use of the drug can be halted, hopefully before the damage is permanent or fatal. One of these statin drugs with the trade name of Baycol had to be recalled in August of 2001 because over 50 deaths were attributed to its use. [8] Baycol is the 12th FDA approved drug recalled since 1997. Although the statistics for deaths caused by other statin drugs are not yet that high here in the U.S., NBC Nightly News has reported that as many as 81 deaths have been attributed to their use in other nations, and a large number of cases of kidney damage have also been reported. [9]

In spite of all the dangers associated with the use of these drugs, the evidence that they prevent heart attacks or save lives is so weak that most of their advertisements state that taking these drugs provides no assurance that it will prevent a heart attack or death. Yet in May of 2001 the National Cholesterol Education Program lowered the level at which total cholesterol should be kept, and recommended that everyone above 200 milligrams of total cholesterol should be taking one of these statin drugs. This would add another 23 million people to the already 13 million people taking these drugs. At $100 per month per patient, this will create a 2.3 billion dollar a month income for the drug companies. It would also mean that 36 million Americans would be placed at additional risk of developing liver and kidney damage, as well as congestive heart failure, obesity, loss of energy and a shorter life span.

The greatest tragedy to all of this risk to one's health and life from taking these drugs is that there is a far, far better way to go. Let me give you five good reasons why this is so.

First is that just lowering only the LDL cholesterol and not raising the HDL as these drugs do, does not provide any significant health benefit.

Second is that not only are the benefits of the drugs somewhat questionable, but they are potentially downright harmful.

Third, a simple, natural supplement is now available that lowers LDL cholesterol and raises HDL to provide enormous positive benefits that protect the heart and arteries, and even promotes recovery and repair, and it does all of this even better than the drugs.

Fourth, is that it works its wonders without risk, or harmful side effects.

Fifth, compared to the drugs, which cost on average, over $100 per month, this nutrient is very inexpensive.

So let's take a look at this amazing life saving heart and artery miracle- working nutrient.

Introducing Policosanol - A Life Saving Nutrient

If I were to ask you to name something made of wax, the first thing you would probably think of would be a candle. Then if I asked you to name something made of alcohol the first thing you would probably think of would be an intoxicating drink. And if I asked you to name something made of an "alcohol wax", you probably would not think of an apple.

Yet an alcohol wax is exactly what covers the outside of the apple and gives it that shiny appearance and slippery feel. The type of "alcohol wax" that covers the apple is from a family of plant based chemicals known as "cosanols" and it turns out they are very important and powerful nutrients. To identify the different members of the cosanol family, scientists chose to identify them with Greek numbers, which signify the number of certain units in their molecule, just as they have done with so many other plant derived chemicals. We are all familiar with this naming system from "beta" of the carotene family and "alpha" from the tocopherol or vitamin E family.

The First Cosanol Breakthrough

Years ago serious athletes and weight lifters loved to take large amounts of wheat germ oil as a nutritional supplement because it gave them so much extra stamina and energy. This was long before anyone knew about something known today as "phyto-estrogens". These are molecules found in plants that are very much like the female hormone estrogen. No one knew it at the time, but it turns out that wheat germ oil is loaded with it. Since these weight lifters and athletes were taking large amounts of wheat germ oil, they were also taking in large amounts of estrogen. After prolonged high-level intakes of wheat germ oil the male athletes began to develop large and feminine breasts.

The athletes loved the extra stamina and energy, but they really did not want to end up looking like a woman. So they asked doctors to help them find out what was going on, and that is when it was discovered that wheat germ oil was loaded with phyto-estrogens. That sparked a great deal of interest to find out what it was in the wheat germ oil that was providing the energy and stamina. Scientist Ezra Levine isolated a waxy alcohol substance in the wheat

germ oil that was discovered to be a cosanol. It was made up of eight units, and thus it was identified as an "octa"-cosanol. It was identical to the wax alcohol that covers the outside of the apple.
At the University of Illinois, Dr. Thomas Cureton wanted to find out if the octacosanol was the active ingredient in the wheat germ oil that gave athletes there energy and stamina.
To find out, he fed large amounts of wheat germ oil to a group of athletes, and to another group he fed pure octacosanol in an amount equal to that received by the group of athletes getting it from the wheat germ oil. After extensive testing Dr.
Cureton was able to prove conclusively that octacosanol was the source of all the energy and stamina the athletes were getting from the wheat germ oil. He found that octacosanol provided many different benefits to the body of the athletes. It increased their speed as well as their stamina, it increased their reaction times, and it stabilized their metabolic rate while under stress. [10]
Dr. Carlton Fredericks, a brilliant nutritionist in New York read the published findings of Dr. Cureton's research and realized that some of those results indicated ocatacosanol was providing benefits to neurological tissues. He began using it to treat those with neurological damage with great success, especially when used right after the trauma to the nerve tissue was sustained. Learning of the great benefits of octacosanol from Dr. Fredericks, Dr. Robert C. Atkins (of the Atkins' Diet fame) also began to use octacosanol with his nerve-damaged patients with great success. He was so impressed by the results he began to use ocateosanol for a wide range of serious health problems. In fact, he found it so beneficial for so many things, by 1988 he was calling it his "universal tonic".[11]
At this point you must be wondering, "If this stuff is so good, why haven't I heard of it before, and why isn't everyone using it?" The answer is quite simple, and two fold. First, as a natural substance it could not be patented and turned into a money making drug, so there was no financial incentive to research, develop or promote it.
Second, at the time the only significant source of it was from expensive wheat germ oil, so by the time the tiny amount of octacosanol was removed, it was a very expensive supplement indeed. Because the supply of octacosanol was limited and expensive, and there was no financial incentive to research its benefits, thus it went largely ignored for over a decade.

Octacosanol Is Rediscovered In Cuba

They say 'necessity is the mother of invention" and that has certainly turned out to be true with regard to finding out what octacosanol can do, and getting the cost of it low enough for the general public to use it as a nutritional supplement.
They harvest a lot of sugar cane in Cuba, and while there is a huge world market for sugar, there is little demand for the material left over after the sugar has been refined out of the cane juice. In the early 1990's Cuban scientists began searching through the left over compounds to see what they could find that might have significant commercial market value to bring income to the depressed Cuban economy. One of the compounds they found in the material left over from the sugar making process was octacosanol.
From data published in the world's medical and scientific literature the Cuban scientists determined this was a nutritional substance worth researching. They also found they could obtain rather large amounts of it from the sugar making byproducts and thus bring the cost down to a level low enough to make it viable in the market place as a nutritional supplement. After that it did not take scientists in the rice growing regions of the world very long to discover that the byproduct left over from polishing rice was also rich in cosanols and thus an additional source of supply was soon made available to the world.
Although about 60% of the cosanol was found in the "octa" form (its most active form), scientists found that many other and supportive members of the cosanol family were also present in this isolated compound, and so they called it "poly" (meaning many) "cosanol."

Scientists Discover Policosanol Provides A Great Many Health Benefits

As research scientists around the world have studied the effect of using policosanol as a nutrient they have been amazed at the extremely wide range of dramatic improvements it has produced in a great many conditions. Since 1994 when large enough quantities of policosanol became available to allow scientist to study it, literally dozens of studies have been performed.
Sixty published medical and scientific abstracts on the results of the nutritional use of policosanol are in the archives of the U.S. governments National Library of Medicine. Listed below is a brief list of some of the amazing results these studies on policosanol have revealed:
Helps prevent lipids (fats) in the body from turning rancid. Rancid fat is a major factor that increases the rate of aging. Helps to protect the endothelial cells from damage, these are the cells that line the blood and lymph vessels, as well as the heart and lungs.
Helps relieve excess blood vessel constriction and lowers high blood pressure.
Helps to increase the basal or core metabolic rate, thus providing more energy and less of a tendency to gain excess body fat.
Improves the performance of the heart muscle (myocardium) thus reducing the risk of congestive heart failure
Helps the aging body produce more sex hormones, be more
sexually active and look and feel younger. Improves and sharpens muscle reflexes.

Serves as an "adaptogen" allowing the body to more effectively adapt to stress without harm. Improves energy levels, stamina and strength. Greatly improves the body's ability to lower the level of LDL and raise the level of HDL to artery and heart protective levels.

No doubt as you read through that list you spotted several benefits from this amazing nutrient you would really love to experience for yourself. Since this book is about preventing and recovering from heart attacks, we are going to concentrate on this amazing nutrient's powerful ability to protect the arteries and prevent heart attacks and strokes by assisting the body in normalizing cholesterol, reducing the number and size of arterial injuries and plaques, reducing platelets from abnormal clumping that cause blood clots, reducing elevated blood pressure and improving blood circulation.

Policosanol Does Not Work Like Statin Drugs Do

When scientists learned that policosanol was effective at lowering blood cholesterol levels they immediately wanted to know how it did this. Naturally they assumed in the beginning that it might work in the same way the Statin drugs did, by inhibiting the liver's key cholesterol creating enzyme HMG-CoA reductase. So they immediately went to work see if they could verify this. In 1996, scientists reported in the journal of Biological Research, that when cholesterol-forming cells were treated with policosanol, their production of cholesterol declined, but their level of the enzyme HMG-CoA reductase remained unaffected. They concluded, "Reductase activity assayed in microsomes treated with policosanol remained unchanged, suggesting that cholesterol synthesis is not inhibited by a direct action of policosanol on this enzyme."[12]

Policosanol Is Non-Toxic

As you know from reading or seeing the TV ads for the cholesterol lowering Statin class of drugs, they are potentially very toxic to the liver and kidneys, and their use must be carefully monitored by a physician, in order to remove the drug at the first sign of liver or kidney damage. Even though policosanol is a natural substance, scientists wanted to make sure that in the process of lowering cholesterol, that it was not toxic to the body in any way. One of the first indications that policosanol was not toxic, was the discovery that it did not work by inhibiting the enzyme systems that the Statin drugs did. This meant policosanol would not interfere with the beneficial and vital to life actions of CoQ-10 as the Statin drugs did. This was wonderful news.

To find out if there was any possible toxicity from the long-term use of policosanol, scientists undertook a number of extensive tests with animals at very high doses over an\ extended period of time and monitored them for any sign of toxicity. In view of the extremely toxic nature of the Statin drugs, I think it is well worth the time to briefly examine the tremendous safety of policosanol shown by the results of these tests:

1. A 12 month study of Sprague-Dawley rats given massive doses of policosanol revealed many positive benefits on their health and "There was no treatment related toxicity".[13]

2. A 12 month study of Beagle dogs given massive doses of policosanol produced many positive benefits but "No blood biochemistry or histo-phathological disturbances attributable to treatment were observed. … The dose was approximately 620 times higher than the maximal recommended therapeutic dose, it indicates a good safety margin for this product." [14]

3. One group of Swiss mice were given a placebo and the another group was given a massive dose of policosanol for 18 months, after which both groups were examined for evidence of any occurrence of cancer. The researchers concluded, "This study shows no evidence of policosanol induced carcinogenicity in Swiss mice."[15]

4. One group of Sprague-Dawley rats were given a placebo and another group massive doses of policosanol for 24 months, after which they were examined for evidence of any occurrence of cancer. The researchers reported, "This study shows no evidence of policosanol induced carcinogenicity in this strain of rats."[16.]

5. To determine the effect of policosanol on reproduction, female Sprague-Dawley rats were fed massive doses during their pregnancy through 21 days after the delivery of their pups. An examination of the maternal animals and their pups revealed no abnormalities of any kind. The researchers concluded, "These results confirm that policosanol does notaffect the reproductive performance of fetal/neonatal development"[17]

6. To determine if policosanol would have any type of teratogenic effect (abnormal formation in offspring) Sprague-Dawley rats and New Zealand White rabbits, including the males, were fed massive doses of policosanol daily beginning 60 days prior to and through mating. The females continued on the policosanol during the entire pregnancy and through day 21 of lactation. No abnormalities were discovered in either the rats or the rabbits and the researchers stated, "It is concluded that policosanol was not teratogenic in either rats or rabbits, nor did it induce reproductive toxicity."[18]

7. A study was done in which Sprague-Dawley rats were fed massive doses of policosanol continuously over three full generations. The researchers concluded, "The results of the present study did not demonstrate any deleterious effects over three successive generations."[19]

8. A 54 week study was conducted with 18 male Macaca arctoides monkeys in which they were fed placebo or various doses of policosanol. After which it was found all those receiving policosanol had a beneficial improvement in their blood lipoprotein levels. The researchers also concluded, "There was a significant reduction of spontaneous aortic atherosclerotic lesions in the treated animals compared to those on placebo.... No policosanol related toxicity was detected by any examination." [20]

It is extremely clear from these extensive tests, identical to those used to determine the safety of any drug or nutrient, that policosanol is extremely safe, even when used at doses hundreds of times above the normal therapeutic amount, and even when taken over a prolonged period of time, including multi-generations.
So far we have learned what policosanol does not do. It does not work on the enzymes that Statin drugs do, it does not interfere with CoEnzyme Q-l0, and it does not cause any harm to any of the organs or tissues of the body, or to the offspring of mothers using policosanol, even at massive doses over prolonged periods of time. Now scientists wanted to know, just how does policosanol work to perform its benefits?
After a lot of hard scientific investigation it now appears to accomplish its wonders by working in several different ways all at once. The balance of this chapter is going to examine how policosanol works and the great many ways it benefits our health.

Policosanol Inhibits The Conversion Of Acetate To Lipoprotein

As you learned in the last chapter, when carbohy38 drates are eaten, they are converted in the body to glucose which first goes to the liver. When there is more glucose in the liver than the body can burn for energy the liver converts it into acetate molecules. Most of these acetate molecules will then be used by the liver to build triglyceride or cholesterol molecules. However, researchers found that when policosanol is present in the cells, there is a reduction in the conversion rate of the acetate molecules into LDL Cholesterol. [21] **This is really good news for those with too much carbohydrate in their diet, which as we have already seen, is the main source from which excess cholesterol is created.**

Policosanol Inhibits Lipoprotein Production By Reducing 3H2O Incorporation

Cholesterol is known as a steroid nucleus because it is the raw material molecule from which all steroid hormones are produced. In order to construct this cholesterol steroid nucleus, the liver cells must incorporate a unique water molecule known as 3H2O into its structure. Scientist found that when policosanol is present in cholesterol producing cells, the process of using 3H2O to produce cholesterol is reduced by about 20%. [22]
Although scientist feel there is still much more to be learned as to how policosanol lowers the production of cholesterol, lets review the three things they have now documented about this process. First, it does not directly interfere with the enzyme HMG-CoA reductase as do the statin drugs. Thus it does not interfere with the cells' ability to utilize the vitally important energy producing enzyme CoQ-lO. This is an important and highly beneficial finding. [12] Second it works on a more basic and flindamental level be inhibiting the utilization of two important raw materials required to make cholesterol.
They are:
1. Acetate molecules derived primarily from excess glucose are inhibited from being converted into excess cholesterol molecules. [21]
2. The 3H2O molecule, which is essential for creating the steroid nucleus of cholesterol, is inhibited from uptake for the creation of excess cholesterol. [22]

Policosanol Increases Removal Of Excess LDL Cholesterol

Even if policosanol only worked in the cholesterol generating cells to inhibit its production it would be an amazing, wonderful, and highly useful nutritional breakthrough. However, when scientists calculated the amount of reduction in the production of LDL-Cholesterol, it was not enough to account for the significant decline of LDL-C that actually occurred in the blood. Therefore they concluded that policosanol must also work by increasing the body's ability to take LDL-C up from the blood and utilize it in the cells and tissues.
Dr. R. Menendez and his co-workers injected a specific amount of a labeled (so they could identify and keep track of it) LDL-C into the blood of rabbits. They measured the amount
and rate of removal of the labeled LDL-C from the blood. Then once they had established a baseline time span for the removal of half the LDL-C, they gave the rabbits the same amount of labeled LDL-C, only this time they had also been fed policosanol by mouth. Now, the time it took to remove half of the LDL-C from the blood was dramatically reduced.
Further research revealed that policosanol had achieved this by activating the LDL binding sites on the cells, and this increased the speed and amount of the LDL-C taken into the cells for their use, and this "enhanced its clearance" from the blood. [23]
Thus we see that policosanol lowers the level of LDL-C in the blood by working in three different ways. Two of these ways are in the liver where it works to reduce the amount of LDL-C that is made there, and the third way is by increasing the speed and the amount of LDL-C that is taken out of the blood for the use of the cells.

Policosanol Prevents Lesions On Arterial Walls

Earlier we learned that in order for arterial plaques to develop there must first be an injury known as a lesion on the inside of the arterial wall. It has been found that a wide variety of various biochemicals in the blood can cause these arterial insults. The first step in preventing vascular and cardiac disease is to prevent the formation of such lesions. Scientists have conducted experiments on several types of animals that have shown policosanol provides protection against such arterial injury, even when a powerful artery injuring chemical
was deliberately injected into the animals arteries.

Dr. M. Noa and research associates took New Zealand rabbits and male Wistar rats and gave them injections of "lipofundin", an oxidized lipid (similar to a super high powered oxidized cholesterol) that is a known irritant that produces injury to the inside lining of the arteries. They divided these animals into various groups, some were fed a placebo, and others were fed policosanol. Those animals that were given the placebo developed large numbers of arterial lesions, while those that were fed the policosanol had very few lesions.

The researchers reported that plicosanol provided a "protective effect" against the development of arterial lesions.[24]

Other researchers using male New Zealand rabbits fed them abnormal diets that created very elevated levels of cholesterol in their blood (hypercholesterolermia). Some of the animals were then fed policosanol and others were fed a placebo. The animals given the placebo saw the inner lining of their arteries become so filled with lesions the inner lining actually thickened considerably. On the other hand, researchers reported, "In most policosanol-treated animals, atherosclerotic lesions were not present……" [25]

In another experiment Sprague-Dawley rats, which were of a genetic strain that spontaneously developed high blood pressure, were injected with citrate, a chemical that is known to cause the cells lining the inside of the artery to slough off, a condition known medically as "desquamating". This is a condition that occurs in humans under plaques that allows them to break lose and form clots that clog the circulation of the blood, creating heart attacks and strokes. This happens more frequently in those with high blood pressure. These animals with high blood pressure then had a small cuff installed around the main artery of the neck (carotid artery). This caused the flow of blood through that region to become very turbulent, such as occurs in the arteries adjacent to the human heart where most major plaques form, and this resulted in a large amount of artery lining endothelial cells to slough off in those animals given a placebo. Those animals that were fed policosanol had a "significantly lower" amount of such cells in their blood. Leading the investigators to conclude "These results demonstrate the protective effect of policosanol……" [26]

This same group of doctors conducted another and even more extensive test of policosanol's ability to protect the wall of the arteries. They first established that placing a restrictive silicone collar around the carotid artery in the neck of rabbits led to extensive thickening of the wall of the artery through the overgrowth of smooth muscle cells inside the arterial wall. This is known medically as a "neointima". Such thickening of the arterial wall due to smooth muscle cell over-growth is known to occur in the arteries of humans as a causative factor in plaque development.

The researchers left the collars on the arteries of the rabbits for a total of 15 days. Cross sections of the arteries from the cuffed area were examined intensely by both light and electron microscopes. Those animals that received only a placebo, had a massive amount of neointima. There was a large overgrowth and proliferation of the smooth muscle cells in the wall of the arteries in the region of the cuff. This overgrowth further restricted blood flow in these animals. These results were identical to the smooth muscle cell overgrowth and proliferation experienced in the turning and dividing arteries near the heart in humans with high blood pressure. The very same smooth muscle cell overgrowth and proliferation, that leads to massive plaque development and heart attacks.

However those rabbits that were fed policosanol had very little smooth muscle cell proliferation or overgrowth, and very little neointima - in spite of their carotid artery having been bound by a silicone cuff for 15 days. Their only protection was the presence in their blood of policosanol that had been fed to them as part of their diet. The researchers stated, "It is concluded that policosanol has a protective effect on neointima formation...." [27]

Policosanol Protects Against Foam Cell Formation

You may recall that in the last chapter I discussed that when scientists first began studying the physical make-up of plaques they found many large cells filled with what appeared to be bubbles and they called these "foam" cells. At first they thought these cells were the cause of the plaques. Eventually research revealed they were actually the large white blood cells known as macrophages which had eaten too many triglyceride (fat) and cholesterol particles, and grown so large they got stuck in the plaque and could not leave. One of the telltale signs of how much fat and cholesterol is deposited in plaque is determined by counting the number of these "foam cells" in the walls of the arteries.

To determine the effect of policosanol on this process, researchers took 18 Wistar rats and fed 6 of them a placebo for 20 days and fed the other 12 policosanol for 20 days. On day 11 through day 19 they gave each rat a daily injection into the gut of lipofundin (a highly oxidized fat) to stimulate plaque formation. Then on day 13 the rats were given an injection of carrageenan (a sea algae widely used in food) just under the skin. When carrageenan is injected directly into the body it causes the development of inflammatory nodules called granulomas that are filled with foam cells. When the arteries of the animals were examined 8 days later, those on placebo were filled with foam cells, however the researchers reported "A significant reduction of the foam-cell formation in granulomas of the policosanol treated rats was observed.

It is concluded that policosanol prevents the development of foam cells". [28] What an amazing discovery! Here we have rats where everything possible was done to induce tremendous arterial granulomas filed with foam cells, the very condition that leads to arterial and cardiac disease, heart attacks and strokes, and when policosanol was given, it "significantly" reduced its formation and protected their arteries.

Policosanol Protects Against Myocardial Necrosis

A heart attack is a terrifying and often very painful event. However, if there is not a serious blockage of blood flow to the muscle of the heart, the muscle cells will not necrose (die).

The individual will recover and go on to live a normal and unimpaired life. On the other hand, when the restriction of blood flow to the myocardium (heart muscle) is extensive, many heart muscle cells will die. This will cause the beating of the heart to become weak, uneven and in many cases deform the heart so badly the individual is an invalid for the rest of their life. Obviously, it is critically important to protect the heart muscle from undergoing necrosis.

To determine whether or not policosanol could possibly play a protective role in this way, scientists took three, equal numbered groups of rats and gave one group a placebo, another group aspirin and the other group policosanol. Then they injected the rats under the skin with isoprenaline, a chemical that causes the blood to form major clots in the arteries of the heart. Those animals that had only been given a placebo suffered from major sized infarcts (a medical term meaning arterial blockage with resulting necrosis).

Those animals given the aspirin had much smaller sized infarcts within the artery than the placebo group, however microscopic examination of the surrounding cells and tissues revealed that necrosis (death of surrounding heart muscle cells) was almost as significant as in the placebo group. On the other hand, when the animals given the policosanol were examined, it was found that the infarct size was much smaller than even that of the aspirin group, and of even more importance was the fact that there was a "significant reduction" in the necrosis of the myocardial cells. The researchers stated, "It is concluded that policosanol delays the evolution of infarction, showing a protective effect on the myocardial necrosis induced by isoprenalin." [29]

Here we see that even when attempts were deliberately made to induce serious harm to the heart muscle cells, policosanol provided a high degree of protection.

Policosanol Protects Against Harmful Oxidation

Although carefully controlled oxidation is absolutely necessary to the production of energy and the maintenance of good health, there is a type of unwanted and uncontrolled oxidation that is very destructive to the cells and tissues of the human body. In fact, many scientists now believe that it is the uncontrolled and unwanted "free radical the human body that may be the leading cause of degenerative disease and the aging process that cuts at least one third off of the potential for a healthy and active human life span.

Scientists wanted to know if policosanol could protect the cells and their internal chemistry and structures from this type of unwanted free radical oxidation. To find out, they took tissues from the livers of a group of healthy rats, put them in a blender along with powerful free radical oxidizing agents. In this way, small structural elements in the liver cells known as microsomes, rich in oxidation sensitive lipids were exposed to a tremendous about of powerful free radical oxidization.

A byproduct of the harmful oxidation of those lipids is thiobarbituric acid, and by measuring the amount of this acid, scientists were able to determine the amount of harmful free radical generated oxidation that had occurred. Having established the base line for the harmful lipid oxidation of liver cells produced in this way, the scientists then repeated the experiment. This time they added policosanol to the diet of the rats for 4 weeks prior to taking liver tissue from them and exposing it to the same powerful oxidizing agents. The scientists now found that the policosanol in the diet of the rats had protected their liver so extensively, that even when exposed to these same powerful free radical oxidizing agents, harmful liver cell lipid oxidation was reduced by 50%. [30]

The lipids within your own body will never be exposed to the vicious free radical oxidizing agents the liver cells of these rats went through. But just think, if policosanol provided this kind of protection in those circumstances, it will certainly provide much more protection for the lipids of your cells from the kind of destructive free radical oxidizing agents your body is likely to encounter.

Policosanol Protects Against Oxidation Of Lipoproteins

We have just learned that dietary intake of policosanol provided great protection to the lipid-laden microsomes in the liver cells of rats, even when directly exposed to powerful free radical oxidizing agents. Now, the scientists wanted to know if the same dietary intake of policosanol would also provide that same kind of protection against oxidation of the lipid portion of the Very Low Density Lipoprotien (VLDLC) and Low Density Liprotien (LDL-C) found in the blood.

This is extremely important since it is the oxidation of the lipids of VLDL-C and LDL-C that are major causes of atherosclerotic damage leading to heart attacks and strokes.

To find out, pure lipoproteins were removed from the blood of healthy rats and exposed to a copper-ion oxidizing agent. Then the amount of thiobarbituric acid present, and the number of dienes (two double-bonds) formed in the lipid molecules were calculated. This determined the amount of lipid oxidation that had taken place in the VLDL-C and LDLC particles. This established a baseline of normal susceptibility to oxidation for the lipoproteins of the blood. Then the rats were fed policosanol as part of their diet for 4 weeks, after which the experiment was repeated. The scientists found that after receiving the policosanol, there was a substantial reduction in the amount of thiobarbituric acid formed and a significant resistance to the formation of dienes occurring within the lipids. This indicated that policosanol greatly inhibited oxidation of VLDL-C and LDL-C.

Another major finding in this same study was that policosanl also increased lysine amino group activity in the

lipoproteins. Nobel Prize winner Dr. Linus Pauling, discovered that one of the major contributing factors in the generation of atherosclerotic plaque was that after an arterial injury, there was a lack of proper activity of the lysine amino group.
His experiments clearly demonstrated that by enhancing its activity that atherosclerosis could be prevented. Here we see that policosanol enhances the activity rate of the lysine amino group and thus offers another mechanism of protection and recovery from artery and heart disease. [31]

Policosanol Protects Human LDL-C From Oxidation

Once scientists had established that when policosanol was given as part of the diet of rats, it would provide significant protection to their LDL-C against oxidation, they wanted to know if it would provide the same protective benefits for humans. They took a group of 69 healthy individuals and did a baseline measurement of the oxidation level of their LDLC particles. They did this by removing the LDL-C from the blood and exposing it to a copper-ion lipid-oxidizing agent, and also to macrophage induced oxidation. Then they measured the amount of lipid oxidation products that were released to establish an oxidation baseline.
Then they randomly divided these healthy people into three groups of 33 people each. Using double blind techniques over the course of the next 8 weeks they fed one group a placebo, the second group 5 mg of policosanol per day, and the third group 10 mg of policosanol per day. At the end of the 8 weeks they again took blood samples from each person, separated out the LDL-C and exposed it to the same copper- ion lipid- oxidizing agent, and also to macrophage induced oxidation. They measured the results against the baseline they had established and found no improvement in those on the placebo.
However for those on the policosanol there was a significant protection against oxidation of the LDL-C. Although even those receiving only 5 mg of policosanol per day obtained significant benefit, those receiving 10 mg per day did even better. It took only 82.74 minutes for maximum conjugated diene (oxidation) of the lipids to occur in the placebo group, but just 10 mg of policoanol per day extended that time to 129.89 minutes. This meant that those taking just 10 mg a day of policosanol received a 56% greater protection against oxidation occurring in their LDL-C particles than those on the placebo.
Keep in mind that these were extremely severe circumstances in which the LDL-C particles were exposed directly to a concentrated copper-ion oxidizing solution. This was a condition far worse than anything that would ever occur within the human body. Even under these extremely adverse circumstances just 10 mg a day of policosanol protected the LDL-C particles from oxidation for a little over 2 hours of direct contact exposure to this powerful oxidizing agent. Since only “oxidized” LDL-C is harmful to the arteries that feed the heart and brain, this kind of protection is of enormous significance in providing protection against developing heart attacks and strokes. [32]

Policosanol Reduces Platelet Aggregation

Floating in the blood serum there are very small discs that are called platelets. Whenever there is a wound that makes an opening through the wall of a blood vessel, various chemicals are released from the site of that injury that cause these platelets to become sticky, adhering to each other and plugging up the hole to prevent the loss of blood. This is clearly a vital, and life saving function. Unfortunately, when arteries begin to develop plaques, to a lesser degree these same chemicals begin to be released throughout the entire blood stream.
In time they build up in the blood and begin to cause the platelets to become sticky and clump together, creating a thrombus (clot) that can block the flow of blood to critical tissues. In the brain it is called a stroke (cerebral thrombosis) and in the heart it is called a heart attack (coronary thrombosis).
Scientists wanted to know if policosanol which had already demonstrated so many benefits with regard to a wide variety of elements of the circulatory system, would also reduce the stickiness and aggregation of platelets (tendency to clot and form a thrombus). A group of patients with elevated lipoproteins were randomly divided into two groups and given injections of ADP (adenosine di-phosphate) or epinephrine (adrenalin) after which the degree of platelet aggregation was measured. Then in a double blind fashion one group was given a placebo and the other group was given 20 mg. of policosanol per day for 7 days. After this they were once again given ADP or epinephrine and measured for platelet aggregation. Those on the placebo had the same degree of platelet aggregation as before. However the scientists reported that in the group that received policosanol, it “significantly inhibited platelet aggregation”.
It is also important to know that this benefit came without any loss in normal blood coagulation time that would provide protection in the case of an accident. At a time when there is an increase in the number of strokes and heart attacks caused by platelet aggregation it is wonderful that policosanol can naturally protect us from these events and at the same time offer so many other wonderful artery and heart protecting benefits. [33]

Policosanol Benefits Intermittent Claudication

Intermittent claudication is a condition where the individual suffers from severe and incapacitating pain in the calf of the leg as a result of insufficient blood circulation in the lower leg after walking a short distance. Sixty two such patients were randomly divided into two groups, in a double blind fashion one group was given a placebo, and the other group was given 10 mg. of policosanol twice daily. At the outset of the study both groups scored the same average walking distance on a treadmill. After 6 months those on the placebo had not increased their walking distance.
However those on the policosanol increased their distance from 132.5 meters to 205.7 meters before pain began,

and from 229.5 meters to 365.4 meters before claudication pain was so severe all walking had to cease. This is an astonishing increase in circulation for such a severe condition that it lets us realize that policosanol will do much more than just lower elevated lipoproteins. It also brings its user the benefit of increased circulation throughout the body. For those moving into their senior years better circulation is a major factor that can mean the difference between being a dependent invalid and being an active and independent citizen that can negotiate the sidewalks and climb the stairs.[34]

Policosanol Benefits Cerebral Ischemia

One of the greatest sadness of human life is when we experience the loss of our mental powers. All too often this is caused by a reduction of blood flow through the brain, known medically as "cerebral ischemia". We have just seen that a study with human patients suffering from a loss of blood flow in the lower leg can be helped greatly by the simple administration of a few milligrams of policosanol per day. It is considerably more difficult to test this effect on humans when it comes to the brain, so experimental animals are used. The main artery in the neck (carotid artery) often becomes restricted in older humans and severely decreases the flow of blood to the brain, producing abnormal mental patterns in the elderly. To test the effect of policosanol on this type of condition, scientists took gerbils and restricted the flow of blood through their carotid arteries to create the cerebral ischemia frequently seen in the elderly. The results were such that the effect on the brain, for those on the policosanol, was similar to those animals that did not have a restricted carotid artery. Those animals without the policosanol had a significant accumulation of fluid in the brain along with the death of many brain cells.

The scientists ended their report in these words, "In conclusion, our results show an anti-ischemic effect of policosanol administered after induction of cerebral ischemia in two different experimental models of Mongolian gerbils, suggesting a possible therapeutic effect in cerebral vascular disorders."[35]

What this research has shown is that Policosanol will prevent and reverse a great deal of the adverse effects of cerebral ischemia in the elderly.

Policosanol Improves Nerve Conduction And Reaction Time

As I mentioned earlier in this chapter, two decades ago Dr. Carlton Fredricks of New York was using octacosanol, the main ingredient in policosanol to treat nerve damage. Since that time, almost all the research and press notices have been given to the enormous benefits policosanol affords the blood lipids and circulation. However, two recently completed scientific studies in Italy, which examined the effect of policosanol on nerve tissue, tell us we should not ignore this important and promising benefit on nerve tissue.

The first study examined the rate of release of acetylcholine at the juncture of the nerve and the muscle. It is the chemical acetylcholine released at nerve junctions that carries the command from one nerve to the next, or as in this case, from the nerve to the muscle tissue. The speed and rate at which acetylcholine is released determines the speed at which we remember and think and take action. The researchers fed policosanol to mice and then tested them for the rate of acetylcholine release, both as part of normal muscle movements, and then in response to stimulation. In both cases they found there was a small but important increase in the amount and speed of acetylcholine released.[36]

In the second study the researchers used a group of thirty non-athletic university students who were tested for their reaction times both before and after being administered either a placebo or policosanol or octacosanol for 7 days. There was no improvement in the score of those on the placebo.

However, the groups that received the octacosanol and the policosanol, both experienced shorter reaction times. There were three different types of reaction tests, and while there were slight variations from one type of test to the next, those receiving the policosanol had the very highest score with the best reaction times. [37]

The difference in the ability of elderly people to keep from falling and seriously injuring themselves, or to get out of the way of a passing vehicle, often boils down to having a reaction time that is fast enough to take that first action in a timely way. It is a truly wonderful bonus for those who use policosanol to improve the lipoproteins and the health of their arteries that they are also going to improve their reaction time, which could end up being just as life saving as the benefits on the cardiovascular system.

More Benefits Of Policosanol In A Moment –But First A Brief Review!

I have many more wonderful scientifically documented benefits of Policosanol to reveal to you, but we have already covered a whole range of powerful documented benefits, and before we lose track of those, while covering even more sensational findings in the following pages, I want to review what we have just brought to your attention.

1. Policosanol does not inhibit the enzyme HMG-CoA reductase like the potentially dangerous Statin drugs do. [12]
2. Policosanol does not interfere with the all-important energy producing Coenzyme Q-l0 like Statin drugs do.[12.]
3. Policosanol is totally non-toxic, does not cause cancer or birth defects, even when taken in massive amounts over multiple generations. [14 thru 20.]
4. Policosanol inhibits the incorporation of excess acetate molecules derived from too many carbohydrates in the diet from being converted to lipoprotein. [21]
5. Policosanol prevents the excess formation of the steroid nucleus of cholesterol by inhibiting the 3H2O molecule from being utilized. [22]
6. Policosanol speeds the removal of excess cholesterol from the blood by increasing its uptake and use by the cells of the body. [23]
7. Policosanol prevented the development of injurious lesions along the inside of the arteries of test animals (the

cause of arterial plaque formation), even when deliberately fed powerful oxidizing chemicals. [24]
8. Policosanol prevented the sloughing off of cells from the inner lining of the artery (which leads to blood clot formation) when test animals were given a harsh chemical that produces this reaction. [26]
9. Policosanol prevented the formation of abnormal arterial wall thickening in test animals even when the artery was deliberately and severely restricted. [27]
10. Policosanol prevented the development of "foam cells" (a major factor in arterial plaque formation) even when test animals were given daily injections of a highly oxidized lipid. [28]
11. Policosanol prevented major necrosis (death) of heart muscle cells even when test animals were deliberately injected with a serious blood clot causing agent. [29]
12. Policosanol resulted in a 50% reduction in the free radical oxidation of the lipids within the liver cells of test animals even when their liver tissue was blended with an extremely powerful free radical oxidizing agent. [30]
13. Policosanol increased the activity of the lysine amino group that prevents and repairs arterial lesions. [31]
14. Policosanol prevented the oxidation of VLDL and LDL-C in the blood of test animals, even when these isolated particles were exposed directly to a powerful copper-ion oxidizing agent. [31]
15. Policosanol also protected the LDL-C of humans from oxidation, even when the isolated particles were directly exposed to a powerful copper-ion oxidizing agent. [32]
16. Policosanol was found to protect platelets from becoming sticky and aggregating in clumps that lead to blood clots known as a thrombus, even when human subjects were given injections of substances that normally increases platelet aggregation. [33]
17. Policosanol increased the walking distance for intermittent claudication patients by more than 50%, for distance until the onset of pain, and until maximum distance was achieved. [34]
18. Policosanol prevented the negative and harmful effects of experimentally induced loss of blood circulation to the brain in gerbils, a condition that mimics that of cerebral ischemia in humans. [35]
19. Policosanol increased the release of acetylcholine, the chemical released at the juncture of nerve to nerve, and nerve to muscle. This resulted in a faster reaction time for university students under the stress of test response signals. [36, 37]
As you can see from that quick review of the preceding benefits, all scientifically documented, on the basis of those alone, policosanol makes a major contribution to the health of arteries and the prevention of heart attacks and strokes. If it were anything but a non-patentable natural substance, policosanol would be the most heavily promoted cardiovascular drug ever marketed. Still, we have just scratched the surface of this amazing nutritional substance.

Human Studies With Policosanol Prove Its Protective Benefits

You are now going to learn how policosanol has been used by doctors in carefully controlled scientific studies to effectively improve the blood lipid profile of human patients suffering from what is medically known as hyperlipidemia or hypercholesterolemia. These are just fancy words that mean the fats (lipids), or cholesterol (lipoprotein) in the blood is too high, and is posing a risk to the health of the arteries and the heart. What is really important about the following studies is that they were done with patients that covered a wide variety of conditions. Ranging from middle age to the very elderly, from those with diabetes to those with high blood pressure, to postmenopausal women, to those with serious heart disease. The studies go from very short periods of a few weeks, to those going out 4 years. From as little as 1 mg. of policosanol a day, to as high as 40 mg a day. This gives us a very broad perspective of the effectiveness of policosanol. What is truly astonishing about these studies is that they ALL - without exception - result in a significant improvement. As you will soon see, even a 300% protection against death by a heart attack was provided for cardiac patients on the policosanol versus those that were on a placebo.
Before getting into these studies I want to explain that the use of placebos, a substance the doctors know can-not possibly improve the condition being treated are a necessary part of the scientific process. I know that neither you nor I would want to be the one getting the placebo, and there are those who raise ethical questions about whether or not it is fair to do this. However, without the placebo to measure the result of the active substance being tested versus one we know has no value, it would not be possible to know how much of the benefit might be due to the well known "placebo effect".
This occurs in some conditions where it is possible to generate an improvement based on psychosomatic factors. In those cases, just because the patient thinks they are getting the active ingredient, they actually improve. In some conditions, such as with elevated blood levels of lipoproteins, there is no mental involvement. As a result, in the studies that follow, patients on placebo obtained no improvement in their condition.
These studies were also conducted by random selection of those who received placebo and those that received the policosanol. In addition, the studies were conducted in a "double blind" fashion. Meaning that neither the doctor nor the patient knew who was getting the placebo or who was getting the policosanol. These rigorous scientific precautions totally prevent psychological factors from altering the test results. This allows us to have total confidence in the information we gain from the research.

Policosanol Lowers LDL-C In Patients With High Blood Lipoproteins

Doctors took a group of medical patients who had elevated blood serum levels of lipoproteins and placed them on a diet designed to bring those levels back to normal. There were 20 patients whose lipoproteins failed to respond to diet therapy. These patients were then randomly divided into two equal groups in which they were given either a placebo or policosanol in a double blind manner (neither the doctor or the patient knew who was getting what). The patients who were given policosanol were given 5 mg. once daily for 8 weeks, then they were given the same 5 mg. but this time twice-a-day for the next 8 weeks, and finally the dose was doubled to 10 mg. twice-a-day for the final 8 weeks. As would be expected, the lipoprotein level of those on the placebo did not improve. The following is the result for those taking the policosanol:

LDL-C: Those on 5 mg. once daily dropped their LDLC by 11.3%, those on 5 mg. twice-a-day dropped it by 21.9% and those on 10 mg. twice-a-day dropped it by 31.2%.

HDL-C: Those on 5mg. once daily increased their HDLC by 7.2%, those on 5 mg. twice-a-day increased it by 7.8% and those on 10 mg. twice-a-day increased it by 8.7%.

LDL-C to HDL-C Ratio: Those on 5 mg. once-a-day improved the ratio by 15.3%, those on 5 mg. twice-a-day improved the ratio by 25.6% and those on 10 mg. twice a day improved the ratio by 34.6%.

We see from this study that policosanol improved all aspects of the lipoprotein levels in the blood of those with significantly elevated values, even when all dietary efforts had failed. What is of most significance is that these results are better than can be achieved by any drug. Not only in lowering the LDL-C but in raising the all important HDL-C which drugs do not do, and thus bringing about a greater improvement in the LDL-C to HDL-C ratio than that produced by drugs. It is also important that we notice the improvements increased steadily with an increase in the amount of policosanol taken each day. [38]

Results Of A Two-Year Study

A group of patients with significantly elevated lipoprotein were placed on a diet designed to bring those levels to normal. Following the diet, there were 69 patients who failed to gain improvement in their blood lipoprotein levels. These patients were randomly divided into two groups, using a double blind method to give one group a placebo, and the other group was given 5 mg. of policosanol twice daily for a period of two years. As we would expect, there was no improvement in the lipoprotein level of those on the placebo.

Following is the result obtained by those on the policosanol:

LDL-C: There was a decline in the LDL-C by 25%.

HDL-C: There was an increase in the HDL-C by 21%

This study demonstrated that even on the very low dose of only 5 mg. of policosanol twice a day, when taken over a two-year period of time the improvements were extremely dramatic and beneficial. However, the scientists did a follow up study on these same patients two years after they stopped taking the policosanol. The findings were astonishing, and demonstrated the benefits of policosanol are very long lasting.

Here are the results:

LDL-C: It still showed a 14% decline.

HDL-C: It still showed a 11.2% increase.

These results clearly demonstrate the long-term benefits of policosanol on the cardiovascular system and the sustained protection it gives the heart, even after its use had been discontinued for two years. [39]

Effect Of Higher Doses Of Policosanol

Once scientists had demonstrated the beneficial effect of policosanol on elevated lipoproteins in a dose range of 5 to 20 mg total per day, they wanted to know if higher doses would increase its benefits. After a 6 week diet designed to lower lipoproteins, 89 patients were selected who failed to respond beneficially to the diet. They were randomly divided into three groups, and in a double blind fashion, the first group received a placebo, the second group received 20 mg. of policosanol per day, and the third group received 40 mg. of policosanol for a period of 24 weeks. As would be expected there was no improvement for those on the placebo. Those on the policosanol obtained the following results:

LDL-C: At 20mg. per day it declined 27.4% and at 40 mg. it declined 28.1%.

HDL-C: At 20mg. per day it increased 17.6% and at 40 mg. it increased 17.0%

LDL-C to HDL-C Ratio: At 20 mg. per day it improvedby 37.2% and at 40 mg. it improved 36.5%.

Earlier studies at lower levels of policosanol found no beneficial effect upon the triglyceride level of the blood, however in this study it was found that more policosanol not only provides a better effect upon the lipoprotein levels, it also provides a very powerful and beneficial effect upon the triglyceride level as well.

Triglyceride: At 20 mg. per day it declined 12.7% and at 40 mg. it declined 15.6%.

This study certainly indicated that more policosanol is not only more effective on the LDL-C and HDL-C, but it also

greatly improved the triglyceride level, providing a broad and powerful beneficial effect on all aspects of blood lipids.[40]

Effectiveness Of Policoanol In Postmenopausal Women

It is a well-established fact that once women pass through menopause the protection they had previously enjoyed with regard to favorable blood lipoprotein levels and a lower incidence of cardiovascular disease disappears. Scientists wanted to know if in such a group of women, policosanol would provide them with the protection in this area, which they had lost. To find out they took 56 postmenopausal women with elevated blood lipoprotein that failed to respond to a standard 6-week blood lipid lowering diet and randomly divided them into two groups. In a double blind fashion one group was given a placebo and the other group was given policosanol at the rate of 5 mg. per day for 8 weeks and then the dose was doubled to 10 mg. per day for the next 8 weeks. As would be expected there was no improvement for those on the placebo.
The results for those on the policosanol were as follows:
LDL-C: At 5 mg. per day it dropped by 17.3% and at 10 mg. per day it dropped by 26.7%.
HDL-C: At 5 mg. per day it increased by 4.6% and at 10 mg. per day it increased by 7.4%.
LDL-C to HDL-C Ratio: At 5 mg. per day it improved 17.2% and at 10 mg. per day it improved 26.5%.
This study demonstrated that even at the very low doses of 5 and 10 mg. of policosanol per day, the lipid profiles of this group of postmenopausal women underwent a dramatic and positive improvement that provided them with cardiovascular protection seen in women who have not yet entered into menopause.[41]

High Blood Lipids In Diabetics Benefits From Policosanol

One of the most significant problems faced by non-insulin dependent diabetics (NIDDM), also known as Type II or Adult Onset Diabetes (90% of all diabetics are of this type) is the profound and overwhelming tendency they have to experience high levels of the lipids in their blood. Which is why there is such a disproportionately high number of diabetics that have CAD (coronary artery disease) and eventually die from heart attacks. Thus scientists wanted to know how well policosanol would be able to assist this group of patients to lower their blood lipids to a safe level.
A group of 29 NIDDM patients were placed on a combination of diet and oral drugs to bring their blood sugar to a stable and normal level. Then they were placed on a 6 week blood lipid lowering diet and their blood lipid level was established as a baseline measurement. The patients were then randomly assigned into two groups who received in a double blind manner, either a placebo or policosanol. The policosanol was given at 5 mg. twice-a-day for a period of 12 weeks with the following results:
LDL-C: Reduced by 21.8%
HDL-C: Increased by 11.3%
Triglyceride: Lowered by 6.6%
This study demonstrated that even NIIDM patients whose abnormal blood lipids are very difficult to manage, were able to see major improvements in every aspect of their blood lipid profiles through the use of just 10 mg of policosanol per day in only 12 weeks. [42] No doubt as we have already seen, higher doses at 20 and 40 mg per day would produce even better results.

Even Very Low Dose Policosanol Effective For Middle Aged Cardiac Patients

Twenty three middle aged cardiac patients with elevated blood lipids were randomly divided into two groups, and in a double blind manner one group of 11 patients received a placebo and the other group of 12 patients received just 1 mg. of policosanol twice daily for a total of 14 months. The results of those receiving the placebo was as follows:
LDL-C: An increase of 5.5% (worsening of their condition)
Total Cholesterol: An increase of 3% (worsening of their condition)
The results of those receiving this very low dose policosanol was as follows:
LDL-C: A decrease of 15.6%
Total Cholesterol: A decrease of 14.8%
Even with this tiny 2 mg. of policosanol per day, we see a significant improvement in the blood lipid profile of these patients with coronary artery disease while at the same time there was a worsening of the lipid profile of a similar group that were given a placebo. During this 14-month period, for those on the placebo, their heart disease was listed as stable with no worsening or improvement in their disease. Amazingly, on only 2 mg. of policosanol per day, 41.6% or 5 of 12 patients, actually had a measurable improvement in their coronary artery disease. [43]

Policosanol Improves Coronary Heart Disease Performance Profile

A group of 45 patients with coronary heart disease were randomly divided into three groups of 15 patients each. In a double blind fashion the first group received a placebo and 125 mg of aspirin per day. The second group was given 5 mg of policosanol twice daily, and the third group was given 5 mg. of policosanol twice daily plus 125 mg. of

aspirin. At the outset of the study all patients were given a treadmill test with an electrocardiogram to establish a baseline for the performance capability of each patients heart.
After 20 months on therapy the patients were retested and it was found that those on the placebo and aspirin had a decline in their maximum oxygen uptake, indicating a worsening of their condition. In both policosanol groups there was an increase in the maximum oxygen uptake in the heart muscle during exercise, indicating an improvement in the flow of blood through the heart. The scientists concluded, "These results show that policosanol-treated CHD patients improved clinical evolution, and exercise-ECG responses, owing to the amelioration of myocardial ischemia…." [44] Meaning that the policosanol patients improved because there was an increase in the amount of blood flowing to their heart muscles.

Policosanol And High Risk Elderly With Elevated Blood Lipoprotein

A group of patients in excess of 65 years of age with two or more atherosclerotic risk factors for CAD (coronary artery disease) that had elevated blood lipoprotein were placed on blood lipid lowering diet for 6 weeks. Following the diet, 179 patients that did not gain improvement from the diet were tested for their blood lipid profiles to serve as a baseline reference. They were then randomly divided into two groups, then in a double blind manner one group received a placebo and the other group was given 5 mg. of policosanol daily for 12 weeks and then 10 mg. of policosanol daily for 12 weeks.
As has been repeatedly shown in previous studies, those on placebo showed no improvement in their blood lipid profile.
There was a substantial improvement in those receiving the policosanol with the results as follows:
LDL-C: At 5 mg. there was a 16.9% decrease, and at 10
mg. there was a 24.4% decrease.
HDL-C: At 5 mg. there was a 14.6% increase, and at 10
mg. there was a 29.1% increase.
LDL-C to HDL-C Ratio: At the end of the study there
was a 29.1% improvement.
The researchers concluded: "Policosanol, but not the placebo, significantly improved cardiovascular capacity. … This study shows that policosanol is effective, safe and well tolerated in older hypercholestrolemic patients." [45]

Elderly High Blood Pressure Patients With High Blood Lipoprotein

A large group of elderly patients with high blood pressure but with no history of cardiac or cerebrovascular disease were examined for elevated lipoprotein levels. 589 male and female patients with high blood pressure were found that had significantly elevated blood lipids. They were then placed on a blood lipid lowering diet for 6 weeks and baseline measurements of their blood lipids and blood pressure were taken.
These patients were then randomly divided into two groups. In a double blind fashion one group was given a placebo and other was given policosanol at the rate of 5 mg. once per day for 6 months, than increased to10 mg. for the final 6 months. As would be expected, there was no improvement in the blood lipid profile of those receiving the placebo.
The result of those on the policosanol for 12 months is as follows:
LDL-C: A decline of 20.5%
Total Cholesterol – A decline of 15.4%
Triglycerides: A decrease of 11.9%
HDL-C: An increase of 12.7%
Total Cholesterol to HDL-C Ratio: An improvement of 20.1%
Here we see that elderly patients with high blood pressure and elevated blood lipid profiles responded in the same highly favorable manor we have seen with previous studies on younger patients with normal blood pressure.
However, there were even more benefits the patients on policosanol received as shown below: Systolic Blood Pressure: Placebo group – zero improvement.
Policosanol group – significant reduction.
Serious Adverse Events: Placebo group – 12 events 4.1%
Policosanol group – 5 events 1.7%
Deaths due to heart attack: Placebo group
Policosanol group – 0
The most significant factor with regard to any therapy for elderly patients with high blood pressure and elevated blood cholesterol is how well it will protect them from dieing from a heart attack. In this study we see that out of 295 such patients receiving policosanol there were no fatal cardiac events compared to 3 such fatalities in an equal number of those on the placebo. This is a protective factor of 300% against death due to a heart attack for those taking policosanol versus those not getting its benefits, even at this low dose level. [46]

More Dramatic Policosanol Results In A Moment – But First A Brief Review!

Policosanol does so much, and there is so much evidence supporting its effectiveness, that before we become overwhelmed with its superiority when head to head studies show how it beats drugs at their own game, I want to give you a very brief review of the nine scientific studies we just presented that shows its application in a wide range of situations.

1. Policosanol given to hypercholesterolemic patients, lowered LDL-C by 31.2% at 20 mg. per day over 8 weeks, HDL-C increased by 8.7%, LDL-C to HDL-C Ratio improved by 34.6%. No benefit was seen on placebo. [38]
2. Policosanol given to hypercholesterolemic patients at just 5 mg. twice-a day for two years lowered LDL-C by 25%. Two years after the study was completed the LDL-C was still 14% lower than originally. HDL-C at the same dose increased by 21% and two years after the study there was still an 11.2% increase. No benefit was seen on the placebo. [39]
3. Policosanol given to hypercholesterolemic patients at the higher dose of 40 mg. per day for 24 weeks LDL-C declined by 28.1%, HDL-C increased by 17.0%, LDL-C to HDL-C Ratio improved by 36.5%, Triglyceride declined by 15.6%. There was no change for those on placebo. [40]
4. Policosanol given to hypercholesterolemic postmenopausal women at 10 mg. per day for 8 weeks lowered LDL-C by 26.7%, HDL-C increased by 7.4%, LDL-C to HDL-C Ratio improved 26.5%. No benefits were seen for those on the placebo. [41]
5. Policosanol given to Type II diabetic hypercholesterolemic patients at 5 mg twice daily for 12 weeks lowered LDL-C by 21.8%, HDL-C increased by 11.3%, Triglyceride decreased by 6.6.No benefits were seen for those on placebo. [42]
6. Policosanol at the very low dose of 1 mg. twice daily was given to middle aged cardiac patients with hypercholesterolemia for 14 months, lowering LDL-C by 15.6% and Total Cholesterol declined by 14.8%, with an astonishing 41.6% of these cardiac patients actually experiencing a significant improvement in their heart disease. Those heart patients on the placebo experienced a worsening of hypercholesterolemia with their Total Cholesterol increasing by 3% and their LDLC increasing by 5.5%. [43]
7. Policosanol at the rate of 5 mg. twice daily was given to cardiac patients with hypercholesterolemia for 20 months. Those on policosanol experienced a significant improvement in their oxygen utilization by the heart muscle during treadmill exercise, while those on the placebo experienced a decline in the ability of their heart muscle to use oxygen. [44]
8. Policosanol was given to high-risk elderly patients with two or more factors of coronary artery disease and with hypercholesterolemia at the rate of 5 mg per day for 12 weeks, and then 10 mg. per day for 12 weeks. The LDL-C declined by 24.4%, the HDL-C increased by 29.1% and the LDL-C to HDL-C Ratio improved by 29.1%. There was no improvement for those on the placebo. [45]
9. Policosanol was given to a large group of elderly patients with high blood pressure and hypercholesterolemia at the rate of 5 mg. daily for 6 months and then 10 mg. daily for 6 months. LDL-C declined by 20.5%, Total Cholesterol declined 15.4%, Triglycerides declined 11.9%, HDL-C increased 12.7% and Total Cholesterol to HDL-C Ratio improved 20.1%. There were no improvements for those on placebo, with 3 heart attack deaths among this group. Most importantly, there were no heart attack deaths among those receiving the policosanol, thus providing a 300% protective factor against heart attack deaths over those on placebo. [46]

Policosanol Beats Lovastatin (Mevacor*) And Simvastatin (Zocor*) *Registered Trademark

I wanted you to see just how dramatically effective policosanol was at protecting the arteries and heart under a wide variety of circumstances and conditions before I let you see just how much MORE effective it is than the high priced and risky drugs. I was concerned that once you see the evidence that follows, you would tend to overlook the details of the enormous scientific evidence that clearly documents its overwhelming and wide-ranging benefits. By giving those to you first, you now have a firm basis of understanding that will allow you to grasp the reality of what you are about to learn.

In 1999 at the University of Chile, at the Central Cardiovascular Hospital Clinic a rigorous study was done under the direction of doctors, H. Prat, O. Roman and E. Pino, that compared the effectiveness of policosanol to the cholesterol lowering drugs lovastatin and simvastatin. Patients with LDLCholesterol in excess of 160 mg. per deciliter were placed on a blood lipid lowering diet for 6 weeks. Those whose LDL-C failed to decline were randomly divided into three groups. In a double blind fashion, 55 patients were given policosanol at the rate of 10 mg. per day, 26 patients were given lovastatin at 20 mg per day, and 25 patients were given simvastatin at 10 mg. per day. The serum lipoproteins of all the patients was measured after 8 weeks of therapy and compared to their original levels at the start of the study. Here are the results: LDL-C Percentage of Reduction HDL-C Increase

Policosanol 24%
Significant
Lovastatin 22%
None
Simvastatin 15%
None

The results shown above tell the whole story! Policosanol clearly outperformed both drugs, not only in lowering the LDL-C but also in raising the all-important HDL-C by a scientifically significant amount, while the drugs had no effect at all. [47]

Policosanol And Lovastatin With Hypercholesterolemic Type II Diabetics

At the Enrique Cabrera Hospital in Havana, Cuba, Dr. N. Crespo and colleagues conducted a research study in 1999 with Type II diabetics with high blood serum levels of lipoproteins. For 6 weeks these patients were put on a blood lipid lowering diet, after which those who did not obtain improvement were divided in a random fashion into two groups. In a double blind fashion 27 patients were given policosanol at a dose of 10 mg. per day, and 26 patients were given lovastatin at 20 mg. per day. After12 weeks their blood serum was drawn and the lipoprotein was measured and compared with their original profile at the start of the study. These are the results: LDL-C Percentage LDL-C to HDL-C Ratio of Reduction Improvement
Policosanol 20.4% 23.7%
Lovastatin 16.8% 14.9%
HDL-C Percentage of Increase
Policosanol 7.5%
Lovastatin Non-significant
It is clear from the above results that policosanol is very superior to drug therapy for controlling the risk factors posed by elevated blood levels of lipoprotein. However, this is only part of the story. The ancient rule of medicine is "first do thy patient no harm". Thus it is vitally important that in attempting to improve a certain aspect of health, that you do not create another and potentially more severe problem. In this study the physicians tested blood levels of liver enzymes to determine if the therapy they were testing was having any adverse effect upon the liver. They found no changes in these enzymes among those on the policosanol.
Here is what they reported for the drug - "Lovastatin moderately, but significantly increased levels of aspartate aminotransferase, creatine phosphokinase and alkaline phosphatase."
These are three key enzymes of the liver which when elevated indicate the liver is under severe stress. Keep in mind that this was after only 12 weeks of use. It is not difficult to realize that if such stress on the liver was maintained for months or years, that severe and irreversible liver damage is likely to occur. Here is how the researchers closed their report,
"In conclusion, policosanol administered at 10 mg/day produces more advantageous changes in HDL-cholesterol and has a better safety and tolerability profile than lovastatin 20 mg/day."[48]

Policosanol And Pravastatin (Pravachol) In Elderly Hypercholesterolemic Patients*

*Registered Trade Mark

At the Medical and Surgical Research Center in Havana, Cuba in 1999 a therapy effectiveness study was conducted by a team of physicians under the direction of Dr. G. Castano. The study examined the effect of policosanol and the drug pravastatin on the elevated levels of blood lipids in the elderly, as well as these agents ability to inhibit blood platelet aggregation (clumping that leads to clots) and endothelemia (a thickening of the inner lining of the arteries that reduces blood flow, and raises blood pressure).
Elderly patients with high blood lipoprotein levels that had high coronary risk were placed on a blood lipid lowering diet for 6 weeks after which their serum lipoprotein levels were measured. Those whose LDL-C remained above 3.4 mmol/l were randomly divided into two groups, and in a double blind fashion, one group was given 10 mg. per day of policosanol, and the pravastatin with their evening meal for 8 weeks, after which other group was given 10 mg. per day of their blood lipid profile was examined and compared to the original results. The results were as follows:
As can be clearly seen from the above results, policosanol was overwhelmingly superior to the drug provastatin in improving all aspects of blood lipoprotein that are associated with coronary artery disease. It should also be noted that although endothelial thickening of the blood vessel walls was reduced by both agents, the reduction by policosanol was listed as significantly superior. Another vitally important superiority of policosanol was its ability to substantially reduce platelet aggregation in the face of aggregation inducing agents, versus the weak to non-existent ability of the drug to do this.
In addition, there was no increase in liver enzymes for those on policosanol but there was a modest elevation of the liver enzyme alanine amine transferase in those on provastatin.
The researchers closed their report with these words: "In conclusion, the effects of policosanol (10 mg/day) on lipid profile, platelet aggregation and endotheliomia in older patients with type II hypercholesterolemia and high coronary risk are more favorable than those induced by the same dose of pravastatin." [49]

Policosanol And Acipimox In Hypercholesterolemic Patients

In 1999 a team of doctors under the direction of Dr. L. Alcocer in the Department of Cardiology, at the Mexico General Hospital in Mexico City conducted a study with a group of patients with elevated blood lipoprotein levels. This study included the drug acipimox, which has the characteristic of lowering the level of free fatty acids (FFA) in

the blood. The doctors wanted to know if this drug was more effective than policosanol in lowering the overall lipoprotein profile in the serum of patients where this profile was elevated.
To find out, the doctors placed a group of patients with elevated blood lipids on a lipid lowering diet for 12 weeks, and then selected 63 patients whose blood lipids did not respond to the diet, for participation in the study. These patients were then randomly divided into two groups, and then **LDL-C Percentage LDL-C to HDL-C Ratio of Reduction Improvement**
Policosanol 19.3% 28.3%
Pravastatin 15.6% 18.9%
HDL-C Percentage of Increase
Policosanol 18.4%
Pravastatin Zero
Platelet Aggregation Platelet Aggregation Stimulated By Inhibition Percentage Arachidonic Acid Collagen Adenosine Diphosphate
Policosanol 69.5% 16.6% 20.3% in a double blind fashion the first group received policosanol at 10 mg. per day, and the second group was given the drug acipimox at 750 mg. per day. After 8 weeks the patients blood was drawn and measured for the level of their serum lipoproteins and compared to the original results. The following are the results of this study:
LDL-C Percentage LDL-C to HDL-C Ratio
of Reduction Improvement
Policosanol 21% 15.8%
Acipimox 7.5% Non-significant
As can be clearly seen from the results, there is no real comparison. Policosanol is far superior. It is also far safer. No adverse effects were reported by any of the patients taking the policosanol. On the other hand, there were five patients who suffered adverse effects on the drug acipimox. Most of the drug patients experienced an elevated level of the liver enzyme aspartate amino transferase, with four of these patients levels going above the upper limit. The researchers concluded their report in these words: "These results indicate that policosanol (10 mg/day) was more effective and well tolerated than was acipimox (750 mg/day) in this study population." [50]

In Every Category – Policosanol Won!!!

We have just reviewed four scientific studies that compared the results of the cream of the crop of the cholesterol lowering drugs – lovastatin (Mevacor*), simvistatin (Zocor*), pravastatin (Pravachol*) and acipimox at recommended doses, to the results obtained using very moderate doses of Policosanol. In every single category that was measured, policosanol beat the drugs hands down, and in some very important categories the drugs did not even make a showing.
A review of the findings on the two most important factors follows:
In addition to the obvious superiority of policosanol to lower LDL-C, when it comes to elevating HDL-C it is in a category all by itself. In order to have healthy arteries, a healthy heart and longevity, this is the most important factor by far. Those who have the highest HDL-C have the least arterial plaque, the healthiest hearts, the lowest risk of heart attack and stroke and best of all - they live the longest in good health.
Finally, we must not forget that in all the tests we have examined in this chapter, policosanol was found to be totally safe, triggering no adverse biochemical reactions of any kind.
This cannot be said for the drugs, which demonstrated adverse liver enzyme patterns in a small number of people, even on normal therapeutic doses over the short 8 to 12 weeks of the tests. Taking such drugs for months or years would significantly multiply this risk, and this is the reason why patients on these drugs must be so carefully monitored. As I mentioned earlier, if policosanol were a drug, it would be the most publicized and heavily promoted drug in the history of medicine. At this time, there is simply nothing else that offers anything close to the kind of protection to the cardiovascular system that policosanol does. ***The lives of more people could be saved each year by the daily use of this nutritional supplement than any other I know of.***

It's Your Health, Your Heart, And Your Life!

America became the greatest nation on earth based on the concept that the average person had enough good sense to know what to do to make their life a success. As modern life has become more and more complex, we have been led to believe that it is just too complex for the average person to know what is good for them. We have become a nation of people who more and more rely upon "experts" in the various areas of life to tell us what is in our own best interest. Unfortunately the experts often have their own best interest in mind and not yours.

Review Of Policosanol Results Compared To Cholesterol Drugs

Policosanol - lovastatin Policosanol – simvastatin
LDL-C lowered 24% 22% 24% 15%
HDL-C elevated Significantly Zero Significantly Zero
Policosanol – pravastatin Policosanol - acipimox
LDL-C lowered 19.3% 15.6% 21% 7.5%
HDL-C elevated 18.4% Zero 15.8% Insignificant
50

As I write we are only two years into the new millennium and we are learning that many major corporate officers and their accounting firms, as well as Wall Street brokerage firms, and their stock analysts and banking firms have lied to the public to such an extent that billions upon billions of dollars have been lost by the American public from their investment and retirement accounts. As a result of relying upon the experts in the investment field, millions of Americans will not have a retirement at all. Poverty is always a terrible experience, and poverty at an old age is a living hell. We pay a terrible price when we fail to do our own thinking and rely solely upon the advice of experts. Nowhere is that more true than in the care of our health. Hundreds of thousands of very wonderful and noble-minded men and women have studied and worked very hard over the past hundred years to become medical doctors. While they had their mind on their studies and the welfare of their patients, the time honored benevolent practice of medicine was stolen from them by the big drug companies and replaced by a giant drug distribution machine.
Today, medical doctors are by and large prisoners within their own profession. They have been reduced to writing prescriptions for the drugs their patients tell them they want, because multi-million dollar advertising campaigns on TV and the other mass media have told them to tell the doctor this is what they need and want. The drug companies who have a product to sell that will bring them billions of dollars in profits do not have your welfare in mind when they run those advertising campaigns, they have their own financial welfare in mind. Beware of the "expert" that comes bearing you gifts that will earn them billions of dollars in profits, they may in fact be wolves in sheep's clothing.
For tens of thousands, perhaps hundreds of thousands of years, women have gone into menopause somewhere around the age of fifty. This is just a normal and natural part of the cycle of life for the human species. Then a few decades ago hormones were discovered and it was found that a reduction in those unique to the female body at about the age of 50 were responsible for the menopause. Next it was found that estrogen, the primary female hormone could be isolated from the urine of the female horse, they called it "Premarin". The drug company producing it sponsored all kinds of research projects at universities that had medical schools to find a use for this new drug. Suddenly menopause, which had always been a natural part of life, was turned into a disease, and every problem of older women was attributed to the lack of the female hormone estrogen. A need for their estrogen drug was thus created and marketed aggressively as Hormone Replacement Therapy (HRT). For decades millions of women have been taking HRT under the misguided belief from the "experts" that it was "the right thing to do".
Recently alarming evidence began to accumulate that replacement estrogen was causing cancer. A little over five years ago it was decided at the National Institutes of Health (NIH) that an 8-year study should be conducted to demonstrate that by combining the synthetic progesterone, Provera with Premarin the harmful effects of HRT could be prevented.
Much to their dismay, as the research program unfolded the results were so alarming that the study was terminated after only 5 years in the interest of the health and safety of the women in the study.
The "experts", doctors on the drug company payroll, were trotted out by the drug company to try and minimize the damage from the cancellation of the study. They stated that each year, out of every 10,000 women on HRT, that as a result of it, "only" 8 would have invasive breast cancer, 7 a heart attack, 8 a stroke, and 18 would have blood clots to major organs. Lets see if we can put that into perspective. According to Dr. Walter Willets, chairman of the Dept. of Public Health at the Harvard School of Medicine, there are currently between 8 and 10 million women using HRT. Even if we use only the most conservative numbers, that is a total of an additional 64,000 strokes, 56,000 heart attacks, 64,000 invasive breast cancers, and 144,000 blood clots in major organs to American women every year. That is a total of 328,000 cases of serious and life threatening health problems to American women every year due to HRT. Even if we are ultra conservative and say that only 10% of those cases end up in death, every year that is still more than 10 times the number of fatalities that occurred in the September 11 disaster. And, that is just the tip of the iceberg. Hundreds of thousands of other women suffer from gall bladder disease, weight gain, water retention, vaginal bleeding, diabetes, hypothyroidism, and depression as a side effect of their HRT.
I bring this up because millions of women believed the "experts" and famous women such as Lauren Hutton and Patti Labelle featured in TV ads, that taking HRT was the right thing for them to do. It has now been proven that they were wrong. This has come at a very great cost to the health and lives of millions of women and their families over the past 40 years. Today men and women in America are being told in the same kind of slick media advertising campaigns using "experts" and famous athletes and coaches that taking statin drugs such as Mevacor, Pravachol and Zocor is the right thing to do to lower their cholesterol. They are wrong! Just as wrong as those who touted the use of HRT were wrong.
I have just presented to you, completely referenced, valid scientific studies, done by highly qualified scientists and medical doctors in first class institutions, using the most rigorous standards for accuracy and reliability, published in accepted medical and scientific journals, that clearly demonstrate that a simple natural "wax-alcohol" found on the skin of the apple, in the oil of wheat germ, the stock of sugar cane and the bran of rice, which is known as policosanol, has the power to normalize elevated blood lipoproteins (cholesterol) far better, more safely and at far less cost than the heavily promoted drugs. It is your life, your health and your heart that is at stake. By reading this book and learning the truth about a superior way to take care of your lipoproteins, your heart and arteries, you are being given an opportunity the women of the past never had, you are being given a way to avoid becoming the sad

victim of the potentially terrible side effects of drug therapy. Already Baycol, one of these cholesterol- lowering drugs, has been recalled due to the great harm it caused. I predict that someday in the near future the negative side effects of the others will be written up in the medical journals when a study reveals the health disasters they are creating. You do not have to be one of the victims, the choice is yours, believe the so called "experts" that the drugs benefits out weigh their risk, or use your own intelligence and chose policosanol, a totally natural part of the food chain that provides even greater benefit without harm. *"Enlighten the people generally, and tyranny and oppressions of body and mind will vanish like evil spirits at the dawn of day*. " Thomas Jefferson

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Complete Product Overview

Homocysteine is an amino acid. Amino acids are the building blocks from which proteins are made. Many amino acids are essential to health. Homocysteine, however, is toxic, damaging the walls of arteries and triggering the deposition of plaque. It is also known to induce DNA damage and accelerate cell death.

Detecting an increased risk of direct homocysteine toxicity may not be the most important reason for checking homocysteine levels, however. Researchers are beginning to realize that elevated levels of homocysteine often reflect the body's inability to perform ongoing maintenance and repair through a process called methylation.
Although most people have never heard the term, methylation is extremely important. Biochemically it is the transfer of a methyl group, which is comprised of one carbon atom and three hydrogen atoms (CH3), from one molecule to another.
Practically it is the process the body uses to manufacture critical hormones like adrenaline and melatonin, to tell genes when to exert their influence, to detoxify foreign substances in the liver, to manufacture new cells, and to repair free radical damage.
Homocysteine forms when methionine, an amino acid obtained from various foods, is used as a source of methyl groups. Diet does not play a major role in the process, however.
It has been demonstrated that dietary intakes of methionine up to five times that typically consumed do not cause homocysteine levels to rise. The primary reason levels rise is a loss of methylation capacity.
When the body's methylation reserve is adequate, homocysteine is converted to either glutathione, an important antioxidant, or back to methionine. When the body's methylation reserve is inadequate or methylation does not proceed normally, homocysteine accumulates.
A wide range of diseases are associated with methylation deficiencies. Over 1500 published articles document the relationship to cardiovascular diseases including heart attack, stroke, hypertension, peripheral vascular disease, congestive heart failure, ischemic cardiomyopathy, venous thrombosis, and retinal vein occlusion.
Alzheimer's disease and vascular dementia have both been shown to be associated with high homocysteine levels. Other neurological diseases including Parkinson's Disease and multiple sclerosis show the same changes. Loss of methylation and elevated homocysteine levels have been found in chronic liver disease, depression, osteoporosis, acral purpura, and polycystic ovary disease.
Complications of pregnancy including premature birth, toxemia, and stillbirth are associated with elevations of homocysteine as are birth defects such as neural tube defects, heart defects, and Down's Syndrome. Collagen diseases such as rheumatoid arthritis, lupus erythematosis, and scleroderma also commonly exhibit high levels of homocysteine.
The same association has been found in many cancers, including those of the breast, cervixl, colon, head and neck, and stomach. Failure of methylation appears to be one of the key factors triggering premature aging.
It is difficult to find a condition that is not linked to inadequate methylation. An analysis of elderly hospitalized patients in France, published in 2003, showed that 100 % had unsafe levels of homocysteine. A startling 45 % had levels above 15 mmol/L. A three-year study of elderly hospitalized patients in Italy, published in 2001, found that the mean homocysteine level was 16.8. Patients with the highest levels tended to present with the most serious diseases and had the highest incidence of atherosclerosis and impaired mental function.
Analysis of homocysteine levels in population subgroups is revealing. Individuals who are receiving dialysis treatments have some of the highest homocysteine levels of any group, often above 50. They also have one of the highest rates of heart attack.
An article published in the December 18, 2003 issue of the New England Journal of Medicine found the same to be true concerning a disease called Systemic Lupus Erythematous, often referred to simply as "lupus". People who have SLE often die prematurely from a heart attack. The study found no increase in cholesterol or cholesterol risk ratios in lupus patients. What it did find was a significant increase in homocysteine levels.
In contrast, people with Down's syndrome have lower homocysteine levels than the general population, averaging between 2 and 3. This is due to the fact that a gene that regulates homocysteine metabolism is located on chromosome 21, an extra copy of which is carried by these individuals.
While heart birth defects are common in Down's syndrome, heart attacks are not. I could find only one reported instance of an individual with Down's syndrome having a heart attack.
A study of the cholesterol patterns of people with Down's syndrome reveals something very interesting. The prevailing attitude is that high levels of cholesterol and LDL cholesterol (the so-called "bad" cholesterol) and low levels of HDL cholesterol (the so-called "good" cholesterol) cause heart attacks.
Individuals with Down's syndrome have cholesterol and LDL levels that are no different than those in the general population and actually have LOWER than average levels of HDL cholesterol.
If the cholesterol and heart disease theory is correct, people with Down's syndrome should be having more heart attacks than the rest of the population, not less.
It is therefore disappointing that the American Heart Association states, "The American Heart Association has not yet called hyperhomocysteinemia (high homocysteine level in the blood) a major risk factor for cardiovascular disease.
We don't recommend widespread use of folic acid and B vitamin supplements to reduce the risk of heart disease and stroke."

Complete Product Overview

A clear and strong correlation of homocysteine levels to Alzheimer's Disease has also been discovered. Studies in

the International Journal of Geriatric Psychiatry, April 1998, and the Journal of Gerontology and Biological Sciences, March 1997, confirmed that people with Alzheimer's disease have much higher homocysteine levels than others in their age group. A number of similar studies have confirmed the link.

Despite the mounting evidence that high levels of homocysteine are associated with Alzheimer's disease, the Alzheimer's Disease Society has criticized the recommendation that people take folic acid supplements to lower their homocysteine levels. Their official position is, "No one knows whether taking (folic acid) supplements will help prevent the disease or whether it will affect the rate at which the disease progresses. The only way this will be discovered is by doing further studies on many, many more patients over a long period of time."

The American Heart Association and the Alzheimer's Disease Society are not alone in their resistance to homocysteine testing. Medicare excludes homocysteine testing as a benefit. The official Medicare position is that homocysteine testing is "not medically necessary."

Skeptics support the position that any link between homocysteine and disease is unproven by pointing to studies that appear to be inconclusive. These studies typically compare homocysteine levels in people having a particular disease with the levels in a control group of people without the disease using a "normal" cutoff of 15 mmol/L. These studies err in failing to recognize an important fact, which is that there is no "normal" level of homocysteine. The American Journal of Epidemiology reported in 1996 that when homocysteine rises from 7 mmol/L to 10 mmol/L the risk of heart attack jumps 35 percent. Other studies looking at the incidence of disease at progressively rising homocysteine levels have shown similar results.

With the average level of homocysteine standing at 10, it is not surprising that studies comparing people who have had a heart attack or have developed Alzheimer's disease with the population at large have reported inconclusive results. One must compare the disease incidence in individuals with high levels of homocysteine with that in those with low levels to draw a logical conclusion.

If it were not possible to support methylation and control homocysteine levels the reluctance of physicians and organizations to accept the link between homocysteine and degenerative diseases might be understandable. The truth, however, is that elevated homocysteine levels can be reduced easily, safely, and inexpensively.

Methylation requires adequate numbers of methyl groups along with optimum levels of folic acid, B-12, and zinc. Taking a broad-spectrum nutritional supplement that contains optimum levels of B vitamins and zinc will assure safe homocysteine levels in approximately 40 percent of those doing so.

Homocysteine can be converted to useful substances such as cysteine and glutathione, provided that adequate levels of B-6 and magnesium are present. This process is limited by genetic deficiencies in cystathionine-B-synthase and B-6 conversion enzyme, however. While some advocate increasing the amount of B-6, B- 12, and folic acid further when homocysteine levels remain elevated, this is rarely effective. Adding other nutrients is usually necessary and much more efficient in achieving the desired result.

One of these additional nutrients is N-acetyl cysteine. N-acetyl cysteine is an amino acid that combines with homocysteine to form a substance that is efficiently excreted by the kidneys. 500 mg. of N-acetyl cysteine should be taken twice daily.

The other beneficial nutrient is N-N, dimethylglycine (DMG). This is a rich source of methyl groups. While some advocate the use of trimethylglycine, the body must convert this to dimethylglycine using an enzyme called betaine-homocysteine methyl transferase (BHMT). As DMG accumulates this process slows down. This limits the effectiveness of supplemental trimethylglycine. 400 mg. of DMG twice daily is usually effective.

The combination of B vitamins, N-acetyl cysteine, zinc, magnesium and DMG will reduce homocysteine levels to a safe range in nearly all cases. These nutrients are present in HCY Formula, a product formulated to address methylation failure and homocysteine accumulation.

The connection between Vitamin B-6 and heart disease was reported as early as 1948 and the connection between B- 12 deficiencies and dementia was reported in 1969. The homocysteine connection was recognized as early as 1980. The suggestion that people should wait to lower homocysteine until the results of long-term studies conclusively prove the consequences of ineffective methylation to everyone's satisfaction is absurd.

If you do not know your homocysteine level I encourage you to have it checked immediately and, if it is over 7, take steps to bring it into a safer range. Because the body's methylation capacity tends to diminish with age and can fall off quickly, everyone over the age of 70 should check their homocysteine level annually.

The mechanisms that trigger and direct the aging process are complex, but a great deal has been learned in the past two decades. The free radical theory of aging, which states that aging occurs primarily because the cells and tissues of the body are attacked and damaged by unbalanced molecules has led to a greater understanding of the body's antioxidant defense system and the nutrients that must be provided to maintain its effectiveness.

It has become clear that methylation is the primary mechanism the body uses to repair free radical damage and that homocysteine levels are a reliable indicator of the body's ability or inability to perform maintenance and repair tasks.

By providing antioxidant nutrients to minimize free radical damage and methylation nutrients to support the repair of the damage that does occur, each of us can expect to age gracefully and die biologically young at an advanced chronological age.

INGREDIENTS

Three HCY (Homocysteine Control) capsules contain the following nutrient values:
N-Acetyl Cyteine ..... 500 mg.
NN-Dimethylglycine ..... 400 mg.
Magnesium (Chelate) .... 25 mg.
Vitamin B-6 ..... 50 mg.
Zinc (Chelate) ..... 5 mg.
Folic Acid ..... 400 mcg.
Vitamin B-12 ..... 100 mcg.
Suggested use: Three HCY Formula capsules should be taken twice daily.

Ulitmate Product #V1004 HCY Formula (180 capsules)