

Breathing Well Health Library

Helping to dispel the myths and half-truths offered as “facts” by the medical industry

CLEARING CHOLESTEROL CONFUSION

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There have been NO major breakthroughs or medical marvels in the field of Cholesterol biochemistry for decades. What has happened is that the major drug companies have gone to the basic biochemistry of cholesterol manufacture and transport and produced chemical substances which alter nature's balance to compensate for the damage that our modern lifestyles are inflicting on our bodies.

It is much the same as a person walking round with a machete buried in their skull complaining of a headache and all the brilliance of the medical world is focused on which painkiller will be the quickest and most effective (and very often most expensive).

The STATIN MANIA is a perfect case in point. To put it in a nutshell, Statins do no more than inhibit the enzyme in the cell which is responsible for switching on the internal cholesterol manufacturing cycle. The fact that this internal cycle is initiated by poor eating practices appears to have nothing to do with anything. The goal is to ignore the problem and sell several billions of dollars worth of toxic drugs to “fix the pain in the head”.

Cholesterol is essential to many processes within the body. Cholesterol is so important that it is produced in our bodies on a daily basis in two specific ways.

Cholesterol levels are expressed either in mg/dl or mmol/L. Australia usually uses the latter and it is simple to convert one to the other by using the factor of .02586 e.g. 200 mg/dl x .02586 = 5.2 mmol/L

The prime source of cholesterol manufacture is in the liver at a rate of between 1000mg and 1500mg per day.

From there is sent into the blood stream where ideally it is absorbed into the cells where it is used. Cholesterol that is not absorbed by the cells is transported back to the liver where it is recycled or simply eliminated.

In addition to being made in the liver, every cell in our bodies can and frequently does make the cholesterol it needs internally, PLUS every cell in our bodies has the ability to pull the cholesterol circulating in the blood into the cell.

Our total blood cholesterol level is determined in large part by whether our cells make cholesterol internally or alternatively gather the cholesterol they need directly out of our blood.

Dietary cholesterol consumption has *nothing whatsoever* to do with determining whether our cells produce cholesterol internally or whether they gather cholesterol directly from the blood.

Many excellent scientific studies have repeatedly demonstrated that even massive increases or decreases in dietary cholesterol consumption have only a minor effect on total cholesterol levels.

There are TWO primary ways that our cells can obtain the required amount of cholesterol:

1. The cells manufacture the cholesterol internally.
2. Messages are sent from within the cell to the surface to attract the cholesterol circulating in the blood.

The reason there is cholesterol circulating in our blood is that the liver ensures that there is an adequate supply available by manufacturing it on a daily basis – irrespective of our dietary intake.

If the cells manufacture the requisite amount of cholesterol internally then there is no need to call for cholesterol to be drawn into the cell from the surrounding blood, and the level rises.

If on the other hand the cells don't produce their own cholesterol internally it is drawn in from the blood and the level drops.

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It matters little to the cells which method is used to get the required cholesterol *BUT WE SHOULD* because there is a correlation between certain types of elevated cholesterol levels and heart problems.

Much of the confusion over cholesterol has to do with the fact that the dietary consumption of cholesterol has *only a very small effect* on determining total blood cholesterol levels. This has been aggravated by the marketing claims from food manufacturers as to the low levels contained in their foods or by touting the cholesterol lowering benefits of other of their products. This has sunk to the ridiculous level of companies claiming that food that HAS NEVER EVER CONTAINED CHOLESTEROL is Cholesterol-Free

This means that trying to control cholesterol by rigorously avoiding all forms of dietary fat and consuming only low cholesterol foods is a misdirected and highly inefficient approach to solving the problem.

The key to lowering cholesterol is to shift our cells' preference from manufacturing new cholesterol internally to using cell receptors to gather cholesterol out of the blood.

By gathering cholesterol out of the blood to meet the cells' ongoing cholesterol needs, blood cholesterol typically stays well within healthy levels and the important HDL to LDL ratios stay in the healthy range.

The manufacture of cholesterol inside the cells is a complex biochemical process and it is outside the scope of this discussion.

If the pertinent cellular enzymes are active cholesterol is made inside the cell and little or no cholesterol is scavenged from the blood.

If the enzymes are NOT ACTIVE, then little if any cholesterol is made inside the cell and cholesterol is actively harvested directly out of the blood, which of course lowers the blood cholesterol levels.

Better yet low density lipoprotein, often considered the "bad cholesterol", is exactly what the cell is looking for when it gathers cholesterol from the blood stream, so not only does total cholesterol lower but the "bad" cholesterol lowers the most.

Popular cholesterol lowering drugs work in exactly the same way.

Cholesterol lowering drugs inhibit the enzyme that activates cholesterol production inside the cell. If the cholesterol making enzyme is inhibited, the cell receptors gather the needed cholesterol directly from the blood, which of course lowers blood cholesterol levels.

When we understand how easy it is to activate the cells that sweep cholesterol out of the blood, we'll know the secret of easily establishing and maintaining normal, healthy blood cholesterol levels *WITHOUT USING DRUGS.*

The "secret" is really no secret at all; in fact any medical biochemistry textbook clearly explains that Insulin and Glucagon are the two hormones that regulate the rate of cholesterol synthesis inside the cells.

Insulin activates the enzyme that causes our cells to make cholesterol internally, which means high levels of Insulin stimulate the continuous production of cholesterol.

Glucagon does exactly the opposite.

Glucagon inhibits the enzyme that causes cholesterol production inside our cells, which results in the cell sending messengers to gather the needed cholesterol directly out of the blood, thereby reducing blood cholesterol levels.

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This is not new information; it is well known cellular biochemistry, in fact it is the EXACT biochemistry that expensive, cholesterol reducing drugs are based on.

The message is simple . . .

When we begin eating in a way that avoids the production of excess Insulin and makes Glucagon the metabolic driver, our blood cholesterol level will fall effortlessly and we will realise that in the bigger picture, dietary cholesterol consumption is essentially a non-issue.

There are two more pieces to the cholesterol puzzle, the first piece has to do with understanding the ratio between the "good cholesterol" and the "bad cholesterol" and the second piece of the puzzle has to do with fully understanding the effect diet has on cholesterol levels.

First of all let's look at the ratios.

Cholesterol ratios are simple. As soon as we understand the difference between LDL and HDL cholesterol the confusion should disappear.

Low density lipoproteins (LDL) are proteins that transport cholesterol from the liver into the blood, making it available for absorption into the cells.

Low-density lipoproteins are like delivery trucks, loaded with cholesterol bringing it into the blood stream just in case it is required.

Unfortunately, if we eat in a way that causes the constant presence of excess Insulin in our system these LDL truckloads of cholesterol are not needed because the cells are making all the cholesterol they need internally.

If the cells make all the cholesterol they need internally that means low-density lipoproteins are carrying unnecessary EXCESS cholesterol into our blood, and this excess cholesterol builds up in the blood, tissues and arteries heralding the onset of chronic health problems.

High density lipoprotein (HDL) helps eliminate this excess cholesterol by collecting it from the tissues and arteries and transporting it out of the blood and back to the liver where it is recycled or dumped.

HDL particles are like the cholesterol clean-up crew.

HDL particles are the empty trucks sent into the blood stream to load up all the excess cholesterol that has spilled out and collected in the tissues and arteries and then transport that excess cholesterol out of the blood. It is obvious that cleaning up excess cholesterol lowers cholesterol levels.

LDL is recognized as the "bad" cholesterol because LDL transports cholesterol into the blood. HDL is considered the "good" cholesterol because HDL gathers up excess cholesterol and transports it out of the blood.

With this in mind, it's easy to understand the importance of having the proper ratio of HDL to LDL. If the ratio of LDL to HDL is too high that means our blood is being loaded with cholesterol faster than the HDL cholesterol clean-up crew is removing it, which means excess cholesterol is building up inside the tissues and arteries and that's bad.

Research has determined that having the proper ratio between HDL and LDL is a more important predictor of health than the level of total cholesterol

This means that someone with a total cholesterol level of 220 mg/dl (5.6) and a good HDL to LDL ratio is in better shape health-wise than someone with a 175 mg/dl (4.5) cholesterol reading whose LDL level is too high compared to their HDL level.

The two cholesterol ratio standards accepted by most doctors and researchers today are:

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1. Total cholesterol divided by HDL should be below 4; and,
2. LDL divided by HDL should be below 3.

There is almost universal agreement in the medical and scientific community that the further away our cholesterol ratios are from these standards the greater the risk of developing heart disease.

It is INCORRECT to assume that lower and lower cholesterol levels somehow translate into better health.

* Research has clearly demonstrated that the "ideal healthy range" for cholesterol is in the 180 to 200 mg/dl range (4.6 to 5.2), and most importantly, with the proper HDL to LDL ratios.

However in Australia average cholesterol over the past 25 years has remained at 5.5 to 6.5 which has always been regarded as the acceptable norm.

* Historically, cholesterol levels over 5.5 seem to correlate positively with increased risk of heart disease, and cholesterol levels lower than 4.6 correlate positively with almost every serious disease known except heart disease. What has to be taken into account here is that cholesterol is ONLY ONE OF THE FACTORS IMPLICATED IN HEART DISEASE.

So far we've discovered that Insulin stimulates the production of cholesterol inside the cell thereby eliminating the need for the cell to gather cholesterol from the blood.

* Given this, we now know that the key to maintaining normal, healthy cholesterol levels is to eat in a way that does not result in excess Insulin and in a way that makes Glucagon the metabolic driver in our bodies.

* We've also learned that LDL carries cholesterol into the blood and tissues and that HDL carries cholesterol out of the blood and tissues and that is why HDL is known as the "good" cholesterol. Now for the final piece of the cholesterol puzzle – the effect of food on cholesterol levels.

While it is true that rigidly enforced, low fat, low cholesterol diets result in lower total cholesterol and lower LDL, it's also true that these diets result in a disproportionate drop in HDL levels. In other words, total cholesterol drops but HDL drops too much in relationship to LDL.

* Research has verified time and time again that higher cholesterol with good HDL to LDL ratios is overall much healthier than lower total cholesterol with poor HDL to LDL ratios.

* This means that while low fat, low cholesterol diets may result in lower total cholesterol, following these diets frequently INCREASES the risk of heart disease.

* Even though the total cholesterol falls the disease risk increases because the level of the "good" HDLs that transport cholesterol OUT of the blood drops too low compared to the drop in LDLs.

* When HDL is too low and LDL is too high it's virtually certain that the blood is flowing thick with the extra sticky LDL cholesterol and that cholesterol is building up inside the tissues and arteries. We already know that a diet high in carbohydrates stimulates excess Insulin and that Insulin causes cholesterol synthesis within the cell and that means high carbohydrate diets are out as a practical means of trying to control cholesterol and get optimum, healthy results.

* We also know that Glucagon inhibits the production of cholesterol inside that cell and stimulates the cell to gather the cholesterol it needs directly from the blood, which, lowers blood cholesterol and improves the important HDL/LDL ratio.

* Now we know that low fat, low cholesterol diets result in lower overall cholesterol but low fat diets also cause the good HDL cholesterol to drop too low, and when HDL is too low the risk of disease increases.

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At this point, the two remaining questions are what dietary factors make Glucagon the metabolic driver, and what causes HDL to increase?

It makes sense to answer the second question first.

* Several highly controlled research studies have conclusively determined that a diet low in carbohydrates and higher in naturally occurring fats, like the fat in milk, cheese, butter, and meat, not only lowers total cholesterol, but results in much healthier HDL to LDL ratios than are attained with diets low in fat and cholesterol.

* Reducing carbohydrates is vitally important because carbohydrates cause excess Insulin and excess Insulin causes most of the problems.

* If we reduce the carbs, we reduce the Insulin; if we reduce the Insulin, we INCREASE the Glucagon; and if we increase the Glucagon we are going to effortlessly burn fat, lower triglycerides, lower our total cholesterol, and improve our HDL to LDL ratio. In other words, if we get this balance right we will literally improve our health in practically every way measurable.

This is quite a turn of events

* For years we've been told eat low fat diets and pile on the carbs because they are low in fat and provide lots of energy.

* Clearly the ever-worsening tragedy of serious obesity, diabetes, and increasing heart disease has proven this advice to be wrong and it's wrong regardless of who gives it.

* The new advice is not based on "popular wisdom," "common knowledge," or "opinion."

The new advice is based on a more complete understanding of medical physiology, cellular biology, and the human endocrine system

* The new advice has been proven repeatedly in highly controlled, doctor-directed, scientific studies that have produced real results with real people.

* These studies have consistently demonstrated the Insulin/Glucagon relationship and proven beyond all doubt that consuming dietary cholesterol has practically no meaningful effect on blood chemistry when compared to the issue of getting our cells to harvest cholesterol directly from our blood instead of making it internally.

The new advice is based entirely on how our bodies works.

* We already know that reducing carbohydrates, especially processed carbohydrates, will result in lower Insulin levels.

* Now for the final question concerning metabolism - How do we make Glucagon the metabolic driver and begin to enjoy the wonderful health benefits gained from establishing the proper Insulin/Glucagon balance in our bodies?

The answer in a word is **PROTEIN**

Protein provides significant nutrition without causing a rise in blood sugar but the key is not just getting protein, the key is getting protein **WITHOUT** excess carbohydrates.

* With or without protein, excess carbohydrates cause a sharp rise in blood sugar and that produces an Insulin response which leads to fat production and storage, high triglycerides, and increased cholesterol.

When we enjoy a delicious protein meal with only minimal carbohydrates coming primarily from fresh green vegetables or fresh seasonal fruit, we set up the **IDEAL** conditions to establish a perfect metabolic relationship between Insulin and Glucagon in our system and that is the ideal balance!

To help clarify the effect food has on the Insulin-Glucagon relationship, consider the following:

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1. A normal healthy person has slightly less than one single teaspoon of glucose circulating in their entire blood stream at any single time.
2. Molecularly, carbohydrates are nothing more than several different kinds of sugars linked together. Once eaten, these sugars are quickly broken down into glucose which instantly enters our blood and causes blood sugar to rise rapidly, just like eating lollies does.
3. Since Insulin production is the natural, healthy response to lower rapidly rising blood sugar, it's easy to understand that consuming sugar, or carbohydrates that quickly break down into sugar, will always result in a quick rise in Insulin.

How many carbohydrates does it take to produce an Insulin response?

* To answer this, keep in mind that 5 grams of carbohydrate equals approximately 1 teaspoon of sugar, which is close to the normal amount of sugar found in the blood.

* Now, a single can of one of the more well-known brands of soft drinks lists 39 grams of carbohydrates in the nutrition information panel printed on the can.

* Divide 39 total carbohydrate grams by 5 grams per teaspoon and we quickly discover that this single can of soft drink contains nearly 8 teaspoons of sugar that will actually enter our blood stream.

* Since 1 teaspoon of sugar is the normal healthy amount contained in the blood, 8 times that amount is clearly too much, which means if we drink that soft drink a quick rise in blood sugar and a quick Insulin response to lower the rising blood sugar is absolutely guaranteed.

How high do Insulin levels climb in order to reduce rising blood sugar?

According to the Textbook of Medical Physiology, Insulin secreted to bring down rising blood sugar rises dramatically within 15 minutes and peaks 2-3 hours later in ranges that are from 10 to 25 times above normal, and Insulin levels remain elevated for hours.

* Now that we understand that once stimulated, Insulin levels stay elevated for several hours, it's easy to understand how eating sugary foods or high carbohydrate meals and snacks throughout the day essentially ensures that Insulin stays abnormally high all day long and that Glucagon is left entirely out of the metabolic picture.

* The key to activating Glucagon and making it the metabolic driver is to eat meals with plenty of protein and, ideally, carbohydrates that come almost entirely from fresh vegetables.

Like cholesterol, as long as we avoid the chemically altered fats that produce dangerous trans-fatty acids, dietary fat consumption is essentially a non issue because, much like protein, natural fat is turned into the structural raw material needed for cell growth and maintenance.

Keep in mind that our bodies contains something on the order of 100 - 150 trillion cells and each and every one of them is made from and contains both protein and fat.

* Not one single cell in our bodies is made from carbohydrates. Protein and fat consumption is essential to life, carbohydrate consumption is not.

* There is not a single disease state associated with a lack of carbohydrates in the diet. The reason for this is that dietary consumption of carbohydrates is simply not that important because our bodies can make all the glucose it needs directly from protein and fat.

The important point is that in order to keep excess Insulin to a minimum and ensure we have enough Glucagon in our system, we need meals that contain protein and that are pointedly low in processed and starchy carbohydrates like bread, french fries, pasta, rice, potatoes, corn and so on.

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Eating in a way that avoids the production of excess Insulin is, without question, the single most important thing we can do to lose weight easily, keep it off permanently and improve our health literally in every way measurable.

* Excess Insulin is a serious threat to our health.

* Excess Insulin is our enemy and excess Insulin is produced in our bodies primarily as a direct result of our food choices.

* Excess Insulin leads to higher triglycerides, higher cholesterol, poor HDL to LDL ratios, higher blood pressure, excess fat production and storage, obesity, Insulin resistance, and dramatically increased risk for diabetes, heart disease, and stroke.

Glucagon is our friend and enjoying protein meals with a minimum of processed carbohydrates activates Glucagon in our system.

Glucagon is the hormone that causes us to burn stored body fat for energy. When Glucagon is the metabolic driver it is amazingly easy to establish and maintain our ideal healthy body weight ESPECIALLY when we are getting the essential nutrients.

There is an increasing awareness in the medical community that total cholesterol levels are not as significant a predictor of heart disease as they once believed to be as long as HDL and LDL are in proper relationship.

*There is a significant and growing amount of research that shows that cholesterol does not cause heart disease and the dietary consumption of foods containing cholesterol has only a minor effect in determining total cholesterol levels.