



Cholesterol: good or bad?

The Tibb viewpoint

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Preamble

Until quite recently in human history, coronary heart disease was a rare condition. However, in the 1930s and 1940s it began to appear more and more frequently, particularly in the Westernised, developed world, and became almost an epidemic from the 1950s. Why? Several explanations have been put forward to explain this puzzling observation. They include the trend towards reduced physical activity, changes in eating patterns, such as increased consumption of fatty foods, and the bringing into the food chain trans-fatty acids and other synthetic additives. However, when chemical techniques were developed which could measure total cholesterol, rapidly, cheaply and accurately, the focus of attention switched to this totally natural substance. In the years since, cholesterol has been effectively and thoroughly demonised. Cholesterol became the undisputed culprit, the prime suspect, for heart disease. Terms like: “bad cholesterol”; “the war on cholesterol”; “drive down your cholesterol” were commonly bandied about. People could be forgiven for assuming that cholesterol was a toxic substance, a “Sword of Damocles” poised over their heads, which threatens heart attacks, strokes, kidney failure and even Alzheimer’s dementia, if not strictly controlled.

This scenario was the impetus for the development of numerous conventional drugs to reduce cholesterol levels in the body: nicotinic acid, fibrates, fat absorption inhibitors, statins, and other more exotic agents following in the R & D pipeline: new chemical entities, vaccines, monoclonal antibodies. Many of these work, directly or otherwise, to interfere with the natural metabolic route leading to the formation of cholesterol. Without doubt, these reduce blood cholesterol impressively. They do, however, also interfere with other essential processes, such as the formation of dolichol, squalene and ubiquinone, which goes some way in providing the basis for their commonly reported side effects and long term clinical problems.

Fortunately, if abnormally high cholesterol is seen as a problem, there are at our disposal a number of alternative, natural approaches. These accept that many diseases of our cardiovascular system are the result of poor lifestyle, especially the food and drink we consume, coupled with poor personal habits, which has lead to a state

of chronic inflammation of blood vessels. These approaches rely on the body's intrinsic ability to heal itself, to govern the metabolic environment, and to correct internal disharmony, or *homeostasis*, which has usually developed imperceptibly. This potent inner force – our “doctor within” – which maintains our optimum health, is called *Physis* in Tibb

What is cholesterol?

Cholesterol only occurs naturally in animals. Plants and fungi have different chemical versions of it, such as phytosterol and ergosterol.

Most people have a very negative attitude towards cholesterol. They link it to heart disease especially, and are strongly advised, especially by the media, to avoid common staple foods like eggs and butter which contain it naturally.

Thirty or so years ago, hardly anyone had heard about cholesterol and its healthcare implications. Today, cholesterol and fats are the source of much debate in health circles, and central to several controversies. A major reason is that cardiovascular disease, which was a rarity until the mid-20th century, is now the number one killer in most developed, and approaching this in some developing, countries.

The *reality is that cholesterol is an absolutely essential part of all living cells*. It is everywhere in our body's tissues and organs; without it living processes would be impossible. To give a few examples of its essential nature:

- It is an integral part of the insulation around the brain's nerves, so preventing leakage of electrical impulses. As such, it is essential for proper memory storage and retrieval.
- Cholesterol is the feedstock for all steroid hormones, which together control the body's metabolism of sugar and minerals, regulate sex behaviour, stress responses, inflammation and control healing.
- It is the precursor of vitamin D, which is essential in bone formation from calcium and phosphate minerals.
- Cholesterol is needed when healing damage to tissues, and is present in protective scar tissue.
- Without cholesterol, there would be no bile acids, which assist in absorbing many nutrients from the digestive tract. It is closely involved in the uptake of key hormones into the brain.
- It probably plays a part in preventing certain cancers naturally, possibly because of its anti-oxidant activity.

There is absolutely no doubt – cholesterol is a major influence on our body's basic metabolism, with a variety of beneficial roles. *So why is cholesterol, a natural and indispensable substance, widely perceived as a major threat to health?*

How cholesterol is synthesised in the body

Cholesterol synthesis in the body proceeds in six major enzyme-controlled steps:

1. The basic primary metabolite acetate is activated to acetyl co-enzyme A (*acetyl-CoA*).
2. Acetyl CoA is converted to an isoprene compound*, labeled *HMG-CoA*.
3. This is in turn converted to *mevalonate*, an important building block in the body. This is the enzyme step where the statins generally act.
4. Mevalonate is changed to IPP**.
5. IPP is converted to *squalene*.
6. Squalene is converted to *cholesterol*.

(*) Hydroxy-methyl glutaryl co-enzyme A (**) Isopentenyl pyrophosphate

The different forms of cholesterol

First of all, the concept of “*total cholesterol*” is vague at best and confusing at worst. We will see that it

embraces a whole batch of components – low-density, very low density, high-density forms, lipoprotein LpA, chylomicrons and many others. Each has a specific function. The various forms of cholesterol that move around in the body have been lumped together, with little acknowledgement of the specific and different role each form plays.

- ***Cholesterol exists in only one chemical form.***
- ***LDL and HDL are lipoproteins -- fats combined with proteins to make them soluble in blood.***
- ***There is no such thing as "good" or "bad" cholesterol in science terms.***

Cholesterol, in common with other fats, cannot physically dissolve in blood as they it is water-repellent, or *hydrophobic*. Cholesterol and other fats must therefore be combined with a water-soluble protein which makes them soluble in blood, or *hydrophilic*. Only then can cholesterol be shuttled or transferred to and from the sites where it is needed.

Low density cholesterol (LDL), commonly labeled "bad" cholesterol, is, in excess, considered the cause of a buildup of inflammatory fatty deposits inside the artery walls which leads to heart disease. It exists as particles of different size. The second is high density cholesterol (HDL), considered "good" cholesterol. HDL's role is to remove cholesterol contained in fatty deposits from the walls of blood vessels.

- ***LDL cholesterol transports cholesterol to the sites where it is required.***
- ***HDL returns unused and damaged cholesterol back from these sites to the liver for reprocessing and recycling.***

LDL particles come in many sizes. Large LDL particles are not thought to be a problem clinically. Only the so-called small, dense LDL particles, especially if oxidised, are thought to be the culprits. The reason is that they can force themselves through the endothelial lining of the arteries and can cause inflammation. High blood pressure is an accomplice in this damaging process.

The many roles of cholesterol

Cholesterol is not a toxic, waste product, as it is often portrayed in the media. It does not need to be eliminated at all costs in order to avoid heart attacks, strokes, kidney failure and poor circulation. There is no excretion mechanism for cholesterol. As with many natural metabolites, the problem only appears when the levels become abnormal or excessive. That is, when control by Physis has been lost.

Cholesterol is an absolutely essential player of many roles in the body. A great deal of metabolic energy is invested in synthesising cholesterol, mainly in the liver. This is certainly not typical of a waste product like urea, creatinine or carbon dioxide. In fact, the bile salts, which are cholesterol derivatives, are actually reabsorbed to a great extent from the lower bowel, to be used again. This is not typical of a waste product.

The list below conveys in greater detail the absolute necessity for cholesterol in the human being:

- ***Digestion***

Cholesterol plays a critical role in our body's digestion processes. It is the building block of the bile salts, *biliverdin* and *bilirubin*, which help in digesting the food that we eat. In fact, most of the cholesterol we synthesise is used to produce bile salts. Without bile fluid our bodies are unable to properly digest foods, especially fats, and absorb nutrients and fat-soluble vitamins. Otherwise, undigested fat can get into the bloodstream and cause additional problems such as blockages of the arteries, resulting in heart attacks, heart disease and brain problems.

- ***Cell building blocks***

Cholesterol is a major structural component of all human living tissue. With other specialised fats it makes up the basic structure of each and every cell. When the cholesterol content of cell membranes increases or decreases for whatever reason, the cells are hugely affected, so that our basic bodily metabolism and ability to produce energy is directly influenced.

- ***Endocrine gland support***

Cholesterol provides invaluable support for the endocrine glands, especially the adrenals and sex glands, which produce the steroid hormones estrogen, testosterone, progesterone and cortisone. These are all derived from the raw material cholesterol. These hormones carry out a myriad of functions in the body, ranging from energy production, regulation of metabolism, essential mineral absorption and bone and tissue formation, to our behaviour, emotions and reproduction.

- ***Bone health***

Cholesterol is also closely related to vitamin D, which has a central role in calcium metabolism and bone health. New roles have been uncovered for this vitamin, including such diverse areas as mental health, the immune system, and cancer prevention.

- ***Diabetes***

The onset of diabetes in all forms is closely linked to low vitamin D levels. In addition, obesity, heart disease, hypertension, stroke, and many chronic disorders occur more often when vitamin D levels are low. Fertility is positively influenced by high vitamin D levels.

- **Sleep**

Sleep has a major role in enhancing newly acquired learning and skills, consolidating our memories, and maintaining brain general activity. One reason sleep is beneficial in areas of learning and memory is that it enables our brains to make better use of cholesterol. This is an important factor in the formation of nerve connections in the brain, or *synapses*, which form the basis of our learning, memory and other properties. These benefits of sleep are thought to be connected to the fact that cholesterol synthesis increases during sleep.

Summary of Known cholesterol functions

- **Steroid hormones** – *it regulates sugar, mineral, stress response, sex physiology, inflammation and healing.*
- **Cell membranes** – *as part of their structure and to maintain activities.*
- **Brain tissue structure** – *as an insulator against leakage of nerve impulses.*
- **Vitamin D** – *this hormone is derived from cholesterol, it is essential for mineral metabolism.*
- **Tissue repairs** – *it is used in healing tissue damage, and is present in scar tissue.*
- **Bile salts** – *chemically based on cholesterol, required for digestion of fats in the gut.*
- **Nerve activity** – *cholesterol is needed in memory retention.*
- **Hormones in the brain** – *helps in their uptake.*
- **Cancer prevention** – *low cholesterol levels are linked to increased cancer rates.*
- **Anti-oxidant** – *Cholesterol may protect against free radical damage*

Cholesterol and disease

Arterial walls are not passive structures, but made up of multiple layers of highly active, dynamic and responsive tissue. When small LDL-cholesterol particles are present locally in high concentrations, and under high pressure, some seep through the top layer into the lower layers, forming a threatening blister-like structure.

Chronic inflammation may be at the core of many, perhaps most, diseases of lifestyle, such as type 2 diabetes and arthritis – and atherosclerosis.

Until quite recently, atherosclerosis was thought to be due to fibrous plaque building up on damaged sections of the arterial walls' inner lining, or *endothelium*. Lumps of adhesive fat, fibre, platelets and other miscellaneous blood cells would form blood clots, influencing

normal blood flow. As these “plugs” increased in size, they cut down blood flow, causing chest pain or discomfort – *angina pectoris*. Eventually a possibly catastrophic heart attack occurred. Worse, part of the plaque would harden over time, then rupture or dislodge, especially if the blood pressure was high, leading to a plug of tissue moving to another part of the body, with a high risk of a stroke, angina, kidney failure or blood circulation problems.

However, researchers increasingly feel that the process is much more complex, and closely involves the inflammatory mechanism. Due to a faulty lifestyle and poor habits, low level inflammation develops as a protective mechanism in the inner lining of the blood vessels (and other tissues within the body). In this

alternative model, cholesterol is brought to the affected areas by the LDL-C vehicle, in order to rebuild new, pristine health tissues. This happens on a continuous basis.

However, in atherosclerosis, levels of cholesterol reaching the damage areas become excessive, and escape control from Physis. This may be due to the presence of other malign disorders such as diabetes and hypertension. When high levels of cholesterol occur in the bloodstream, excess LDL begins to seep into the inner wall of the artery. This triggers an inflammatory response, which actually speeds up the accumulation of cholesterol in the artery wall. This in turn produces more inflammation -- and on and on. Eventually the deposited cholesterol hardens into a plaque, which can rupture and lead to the blood clots that cause **heart attacks** and strokes -- an event that inflammation also appears to help along.

(The nature, roles and disorders related to inflammation have been extensively covered in other articles of this series).

Risk factors for heart disease - innate

- High LDL, low HDL cholesterol
- High levels of oxidised cholesterol
- Diabetes
- Hypertension
- Insulin resistance

Risk factors for heart disease - habits

- Smoking
- Lack of physical activity
- Unhealthy diet
- Persistent overweight

Risk factors for heart disease - general

- Getting older
- Family history

Risk factors for cardiovascular disease

The box (*opposite*) lists several known major risk factors for cardiovascular disease. However, many of these risk factors were present well before the start of the present epidemic of heart and circulation disease. This implies that the rapid rise in the incidence of cardiovascular disease is linked to factors which have come into play recently. Tibb has identified these, and most of them are related to a dysfunctional lifestyle.

The impact of many of these new risk factors can, according to Tibb, be diminished by reasonable and achievable changes to a person's lifestyle. This results in his or her Physis being supported and boosted. These include: changes to a person's regular food and drink intake, to an increase in physical activity, to better avoidance and elimination of natural and artificial toxins, and

paying critical attention to personal habits like smoking and excessive habitual drinking.

Inflammation and disease

Inflammation is not a single, easily described, condition. This is why anti-inflammatory drugs which are undoubtedly effective in a particular inflammatory disorder, like arthritis, say, are virtually ineffective in another inflammatory disorder such as bronchial asthma or psoriasis.

In practical terms, there are two different forms of inflammation – *acute* and *chronic*. The acute form deals with the day-to-day interaction with the environment, such as cuts, bruises, sprains and infections which damage different parts of the body. Once healing is restored, then harmony is restored, and normality ensues. The inflammatory process receives a signal to shut down; to go into 'stand-by' mode.

The chronic or low-grade form, however, is less beneficial and is present over a much longer time. In the inner lining of the blood vessels, for example, it arises from a poor lifestyle (inadequate diet), exposure to environmental toxins (allergens), and self-destructive personal habits (smoking). It arises also from constant high blood pressure, high sugar concentrations, unrelenting stress, oxidized cholesterol, and even the ageing process. Other factors we now know which lead to chronic inflammation are lack of exercise, obesity, and even untreated gum disease. As a result, the inflammatory process is continually activated and all protective mechanisms are on alert. Chronic inflammation also plays a direct role in diabetes, high blood pressure, sleep apnea, asthma and many other conditions.

The inevitable outcome is damage to the sensitive inner lining. As inflammation sets in, the artery swells as the lesion increases in volume, and becomes covered by a tough plaque. However, as we saw earlier, this plaque may rupture, and pieces of debris can cause havoc to the body's blood supply. Inflammation is common to many disorders, including cardiovascular disease. It is part of the natural Physis response to invaders, such as microbes, which it considers a threat.

Inflammation is a complex phenomenon, but the main sequence of events is:

- Blood vessels constrict to prevent blood loss
- The blood becomes thicker, so clotting faster
- The immune system mobilises specialised cells and chemicals to defend the area affected
- Cells surrounding the affected area multiply to replace damaged cells
- The damaged area heals, a protective scar forms, and normal activity resumes

Cholesterol is necessary for building new cellular tissue to replace damaged cells. Cholesterol synthesis by the liver is increased, and released into the bloodstream to travel to the damaged tissue site. Increased levels of cholesterol in the blood are the result of increased inflammation in certain tissues, such as the blood vessels. The cholesterol is only performing one of its many normal functions: healing and repairing.

The conventional medical perspective on cholesterol

Conventional medical treatment tends to view high levels of cholesterol as the cause of diseases of the heart and blood vessels. Cholesterol is not seen as a contributory factor to healing damaged tissue resulting from long-term, chronic inflammation. Drugs used solely to reduce circulating cholesterol are therefore working in opposition to Physis.

It can happen that the production of cholesterol by the liver becomes excessive, and more than that actually needed. Cholesterol synthesis escapes control by Physis. In this case, active measures to reduce the abnormally high levels, Tibb feels, should be adopted. This can be achieved by means of conventional drugs such as the statins and fibrates, or by natural, herbal medicines.

Tibb considers that non-pharmacological measures, especially those involving dietary, lifestyle changes and personal habits, offer a better route to preventing the onset of inflammation-related ailments, and to deal with

any abnormal health problems which may arise. Furthermore, combining the Tibb approach with any conventional medical practice selected may enhance the final outcome.

What is Physis?

Physis is one of the main pillars of Tibb Philosophy, along with temperament, humours and lifestyle factors. Briefly stated, it is our inner vital Life Force. It is the driving agency which maintains equilibrium, harmony within our living body. In doing so, it effectively controls the synthesis, activity and subsequent destruction of all living cells, the tissues they form, and the internal organs they become. It regulates body energy flow, which is central to life; how and when it is formed, how it is distributed, and how and where it is stored. This is a critical function in maintaining internal harmony, as energy is the origin of movement and rest.

The various systems in the body – the circulatory, respiratory, digestive, communication and immune systems, etc. – have their own internal organisation. However, they do not work in complete isolation, but are each connected to the other systems in order to function effectively and efficiently. They are each aware of the activities and problems of the others. In our bodies, Physis has the innate ability to orchestrate all these interconnected systems, a phenomenon known as *homeostasis*.

Physis is the driver behind homeostasis. It comes into play to heal the body when it is sick, restore it when it is depleted, and to develop and allow it to thrive when supplied with suitable nutrition. As the regulator for homeostasis, it is essentially our "inborn intelligence of health".

Tibb and cholesterol

Tibb does not consider cholesterol, or any other natural substance in the body, to be good or bad. All have a role – even natural waste products. As with any body component, however, cholesterol can become a problem when it escapes overall control by Physis. This is when Physis needs assistance.

Disturbed cholesterol metabolism is accepted by Tibb as an important factor in the origin of cardiovascular disease – but not the only one. Tibb regards much cardiovascular disease as an inflammatory disorder linked to excessive amounts of the wrong sort of cholesterol, compounded by other dysfunctional parts of lifestyle which lead to type 2 diabetes, hypertension and unrelenting stress. This occurs in most cases due to faulty eating, a poor, imprudent lifestyle and certain personal bad habits.

Tibb asserts that the risk of cardiovascular disease in many, if not most, people posed by poor cholesterol control in an inflammatory context can be rectified by changes to the diet, more physical activity, monitoring consumption of alcohol, and cessation of smoking. Changes made to these will definitely improve the person's future wellness prospects. These changes should be made gradually – '*start low, go slow*' – to allow Physis to adjust in good time, so that harmony is maintained.

Tibb and inflammation

Tibb views inflammation as a natural and essential part of Physis, dealing with the interface between the person and the environment. It comes to the aid of the body when it is injured or infected, or recovering from ill-health. Damage on a regular basis can induce a state of chronic inflammation, which eventually brings about serious health problems.

Inflammation is a highly complex and mysterious process, with the main outcomes being increased heat and the redness that comes with it, soreness, swelling and loss of movement in the affected parts. These occur in order to allow Physis carry out its healing function. It is a general signal to the person to slow down, and let healing proceed uninterrupted.

Tibb considers cholesterol to be an important agent for Physis in maintaining internal harmony. Cholesterol is not a toxin; otherwise it would be secreted in the urine, faeces, breath or sweat. It only leaves the body as an expended substance which has been used to assist in the digestion and absorption of foods, especially fats. Even then, much is reabsorbed, to be recycled as a valuable feedstock.

How do statins work?

The adult person synthesises about one gram of cholesterol daily, and contains about 35 grams in total. The intake of cholesterol from the food consumed in a Westernised diet is about 200 to 300 mg daily. So the endogenous / exogenous ratio is about 4 to 1.

There are two sources of cholesterol in the body. The first is absorbed from food such as eggs and meat, and this is called dietary or *exogenous* cholesterol. The second is what is produced in the liver, and called *endogenous* cholesterol. Statins act on the second source, by inhibiting, or interfering with, an enzyme which is on the main direct line for its synthesis. This slows down the formation of cholesterol, and leads to a falloff in blood cholesterol levels.

There are several statins now available. They all block the same enzyme in the liver (HMG CoA reductase), but to different degrees. The process by which cholesterol is formed is a long and complex one, starting with simple acetate and ending, five major metabolic steps later, with cholesterol (*see box above*).

Apart from their inhibitory effect on this enzyme, statins can claim another mechanism of action, discovered quite recently. They appear to have an anti-inflammatory effect on the inner endothelial lining of the major blood vessels. They seem to suppress low-grade, chronic inflammation, at least in animals, as shown by reduced levels of a marker of inflammation, C-reactive protein (CRP). This effect is probably achieved by increasing production of the gas nitric oxide (NO) which is a naturally formed vasodilator. This NO is critically important for maintaining internal harmony or homeostasis in the blood vessels' lining, so preventing spasm or vasoconstriction.

However, this possible effect has not yet been shown to yield any clinical benefits in patients who are at serious risk of heart failure or vulnerable to certain kidney diseases.

Side effects of the statins

Statins do not just inhibit cholesterol synthesis –they interfere with other metabolic and biochemical activities. This broad inhibitory effect is probably at the heart of many side effects reported for the statins.

Approximately one person in ten appears susceptible to statin-related side effects. Most commonly reported are:

- Skeletal muscle and joint pain
- Spontaneous nose bleeds
- Sore, irritated throats
- A runny or blocked nose

Other less common side effects linked to the statins are headache, nausea, constipation, diarrhoea, and flatulence. Anecdotally, the most common complaint appears to be fuzzy thinking and memory loss, often described as “brain fog”.

Other effects of the statins

One practical problem with statins is that they interfere with the production of mevalonic acid, which is the end product of HMG CoA reductase activity. Mevalonic acid is rightly called the “building block of life”, as it is the feedstock for other essential substances in the body. Apart from cholesterol, mevalonic acid is also essential for three important substances – *ubiquinone*, *dolichol* and *squalene*.

- **Ubiquinone**, aka Co-enzyme Q10, is essential for the proper function of the mitochondria, the “power stations” within all living cells. It is a key element for producing ATP, the universal energy currency of living tissues. It helps maintain the integrity of the cell membranes, and is very much involved with the workings of heart and lung tissue, and nerve and muscle function. People who are deficient in this co-enzyme suffer from muscle wasting, constant physical weakness, back pain, heart failure and tingling nerves. It also causes inflammation of the muscle ligaments and tendons, sometimes with dire consequences.
- **Dolichols**. This group of substances acts as cell messengers, and plays a very important role in guiding newly synthesised proteins to their proper destinations inside and outside the cell. Interestingly, they are present at high levels in a part of the brain (the *substantia nigra*) which is involved in skeletal muscle activity. Many of these proteins are thought to be involved in the expression of emotions, efficient immune system functioning, and passing messages between cells.
- **Squalene**. This complex substance is on the same pathway from acetate that leads to cholesterol. This too will be reduced by the action of the statins. Reducing the synthesis of squalene could have consequences, as it appears to be implicated in the formation of blood vessels. Squalene is considered by some researchers to be an important component of the Mediterranean diet. As such it may be a protective agent against the formation of cancer cells. The recent assertion that statins may protect against cancer seems at odds with this.

Can cholesterol levels be too low?

All living cells need cholesterol to thrive, and this applies particularly to nerve cells within the brain. Men with chronically low cholesterol levels are more prone to depression, possibly because cholesterol is needed in the synthesis of the “feel good” neurotransmitter *serotonin*. Suicide and violent behaviour have also been connected to abnormally low cholesterol levels.

An increased risk of developing cancer and Parkinson’s disease has also been linked to low cholesterol levels.

The Tibb approach to high cholesterol levels

Tibb does not see the cholesterol issue in terms of “good” or “bad”, but as a part of the body’s inner harmony that has escaped control from the body’s governor, Physis. This may be due to genetic factors, or temperamental inclination, or to an unwise lifestyle, especially regarding diet and exercise.

Tibb avoids the use of synthetic, new-to-nature chemicals in favour of supporting Physis through lifestyle improvements and changes to destructive habits. All interventions are ‘Physis-friendly’.

Food and drink

Regularly eating foods rich in saturated fats and cholesterol has long been implicated in cardiovascular and other diseases. However, recent evidence is not so clear-cut, with “natural” eggs and butter, for instance, now probably exonerated. Interestingly, high sugar intake is now being examined as a possible cause of raised cholesterol. Even so, processed foods, which are often loaded with trans-fatty acids, salt to excess, fructose syrup and a miscellany of chemical

additives, preservatives, colourants, etc, are still under suspicion.

Tibb regards a balanced diet as a valuable pathway towards cardiovascular health, especially if begun in the early years. Eating fresh fruits and vegetables, reducing intake of sugary products, fried foods and processed foods is recommended, as is eating leaner meats, fish and chicken instead of red meats. Increasing the intake of nuts, legumes, fish oils, high fibre grains such as oats, and drinking green tea also help enormously.

Exercise

Increasing physical activity and regular exercise is a proven way to boost general health, and specifically that of the heart and circulation. All physical exercise is beneficial, but to different degrees. Tibb recommends a minimum of 20 to 30 minutes exercise such as walking at least 5 times weekly. Tibb suggests physical activity which is in harmony with the person’s temperament. Each person should select the type of activity which suits his or her temperament, and is stress-free and enjoyable. This will encourage long-term adherence.

Losing weight

A person troubled by excessive body weight will benefit substantially from the loss of a few kilos. The cholesterol profile, if in a state of disharmony, will trend back to normal. This may be achieved by a combination of the above dietary changes, increased physical activity and restraining certain habits.

Personal habits

Smoking is without doubt a major factor in inducing chronic inflammation in most parts of the body, and especially the endothelial lining. This is mirrored in the number of chronic diseases which are brought on by smoking. Giving up smoking reduces the risk almost immediately, and much more over time. Abnormally high levels of cholesterol should, and does, swing back to normal, and inner harmony will be restored to the cholesterol metabolic profile.

Although moderate, responsible consumption of *alcoholic drinks*, especially wine, will improve the cholesterol situation, excessive, regular or binge drinking only has a bad effect, as it induces chronic inflammation, so raising the overall risk. Cutting down will improve the cardiovascular risk profile, and confer other health benefits.

For Tibb, there has to be balance in the lifestyle factors which support Physis. This is best achieved with health promoting and nourishing food and drink, appropriate exercise, proper elimination of natural waste and artificial toxins, and good sleep hygiene.

Discussion

From being a rare condition, even a medical curiosity, less than a century ago, atherosclerosis is now arguably the disease of the 21st Century, especially in the developed and (increasingly) the emerging economies. Conventional medicine has placed the source of this huge increase in incidence squarely at the door of high blood cholesterol. The reason is that several of the known risk factors for atherosclerosis, specifically smoking, high blood pressure, stress, high blood glucose levels, existed before the epidemic gained momentum. However, in recent times the increased consumption of saturated fats and cholesterol-rich foods has been implicated as the source of fatty deposits in the endothelial lining of the arteries. Cholesterol is now considered the prime culprit.

Atherosclerosis is now generally considered to be an inflammatory disorder, brought about by LDL particles, especially the small, oxidised forms, penetrating the inner lining of the arteries. The removal of chronic inflammation can be approached in two different ways; by natural medicine or by conventional medicine.

Inflammation in natural medical paradigms, such as Tibb, is seen as a normal defensive mechanism for protecting damaged tissues, under the control of inner healing mechanisms, specifically Physis. Cholesterol is transported as LDL in order to carry out repairs, and damaged material removed back to the liver by HDL. However, in atherosclerosis the chronic inflammation escapes control, so high cholesterol levels accumulate.

Tibb does not view cholesterol as “bad” or “evil”. It is not a toxic substance. High cholesterol levels do not present with specific signs or symptoms, unlike, say, diabetes or hypertension. Not only is cholesterol found in the blood, it is also present in every cell in the human body. It has many important uses in the body that are crucial for its continued good health. These include producing vitamin D, cell membranes and hormones. Cholesterol also helps produce bile acids that aid in the digestion of fats. Creating memories and ensuring smooth neurological operation is also an important function of cholesterol in the body.

The Tibb approach is to encourage inner healing of the endothelial lining by changes to lifestyle and personal habits. Diet, smoking, stress and high sugar levels, for example, are known to induce a state of low-level inflammation. The Tibb approach effectively reduces the state of chronic inflammation, so preventing further formation of plaque inside the arteries.

The conventional approach, on the other hand, is to intervene by reducing cholesterol levels aggressively with powerful metabolic inhibitors, to increasingly lower levels. These enzyme inhibitors interfere with the body's natural harmony, and lead to distortions in the production of key substances like dolichol, co-enzyme Q10 and squalene. Whilst the efficacy of these agents, predominantly statins, are undoubtedly effective in patients who have had a heart attack or stroke, or are at serious risk for them, there are penalties to be paid in terms of side effects and possible long term adverse consequences.

The evidence for adopting statins rapidly as a broad strategy, with scant regard paid to other, non-pharmaceutical options, in order to prevent a cardiovascular event, is not so convincing. Also, long-term statins use leads to the appearance of several side effects, the main ones being fatigue, pain in the skeletal muscles and nerve damage. These are probably linked to the depletion of essential metabolites in the body. More alarming perhaps, is that the risk of diabetes rises in many patients who use statins.

Summary

The alarming rise in the incidence of atherosclerosis and other lipid disorders over the last few decades poses enormous challenges to the healthcare services of developed countries, and indeed many developing ones. The consequences of this disorder, such as cardiovascular diseases, strokes, kidney failure – impose a huge financial burden.

Proponents of natural medicine and conventional medicine differ in their concepts of both the origin of this disorder and in its prevention. Natural medicine, such as Tibb, largely accepts that the emergence of atherosclerosis reflects a quantum change in dietary habits over recent times, especially in the increased consumption of salt, hydrogenated fats and sugars present in processed foods. This has led inexorably to a distortion in the body's natural inflammatory process, which is a protective mechanism which is part of inner healing. For the majority of people with lipid disorders, therefore, the route to healing lies through marked changes to lifestyle, specifically in diet, physical activity and personal habits.

Conventional medicine, on the other hand, has unequivocally identified cholesterol as the culprit responsible. Treatment usually involves reduction in cholesterol by the use of inhibitors of synthesis, particularly statins, which effectively reduce levels of cholesterol in the blood; but at a cost of both short- and long-term toxic effects. The therapeutic mantra now appears to be '*the lower, the better*'. The inflammatory response is also attenuated by the use of such drugs.

Reducing cholesterol levels excessively, especially by means of chemicals, leaves our bodies and brains prone to diseases, injuries and structural deterioration. Tibb maintains that there are better ways than consuming permanently cholesterol-lowering agents, such as the statins, for preventing lipid disorders. They include adopting a more appropriate lifestyle, especially by eating wisely, exercising properly, and dispensing with certain poor personal habits.

Further reading

On **Coronary Heart Disease, South Africa:**

Online at: www.worldlifeexpectancy.com/south-africa-coronary-heart-disease

On **Risk Factors for Coronary Heart Disease:**

Online at: www.nhlbi.nih.gov/health/health-topics/topics/hd/

On **Cholesterol:**

Online at: [/en.wikipedia.org/wiki/Cholesterol](http://en.wikipedia.org/wiki/Cholesterol)

On **Cholesterol Assays:**

Online at: www.webmd.com/cholesterol.../tests-for-high-cholesterol-lipid-panel

On **Inflammation:**

Online at: www.tibb.co.za/articles/Part_1-Overview_and_historical_significance_of_inflammation.pdf and sequels

On **Tibb** (general):

Online at: www.tibb.co.za/images/Traditional_Roots_of_Medicine.pdf

On ***Tibb and high cholesterol:***

Online at: www.tibb.co.za/ailments.html

On ***Tibb and Lifestyle:***

Online at: www.tibb.co.za/articles/Tibb_and_Lifestyle.pdf

On ***Tibb and Physis:***

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Keywords:

Cholesterol: good or bad? The Tibb viewpoint

The different forms of cholesterol

The many roles of cholesterol

Cholesterol and disease

Risk factors for cardiovascular disease

Inflammation and disease

The conventional medical perspective on cholesterol

Tibb and cholesterol

How do statins work?

Can cholesterol levels be too low?

The Tibb approach to high cholesterol levels