

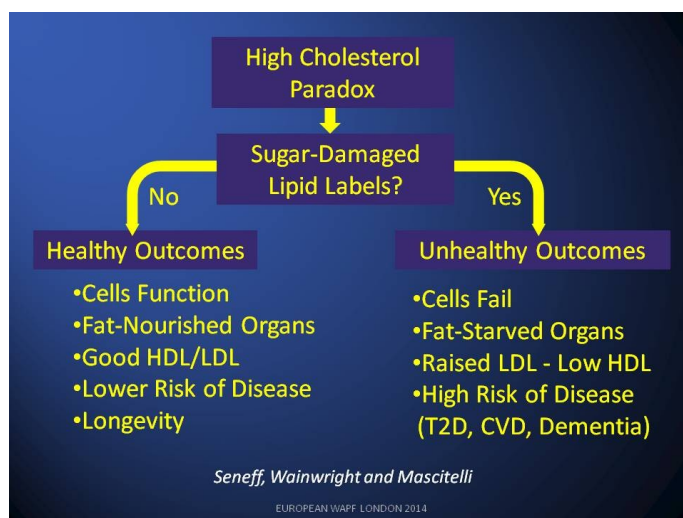
# The High-Cholesterol Paradox

Based upon European WAPF Conference 2014 presentation accredited by:  
*The Naturopathic Nutrition Association,  
Federation of Nutritional Practitioners (FNTP)  
British Association of Applied Nutrition (BAAN),  
British Association of Nutritional Therapy (BANT)*

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## The Paradox



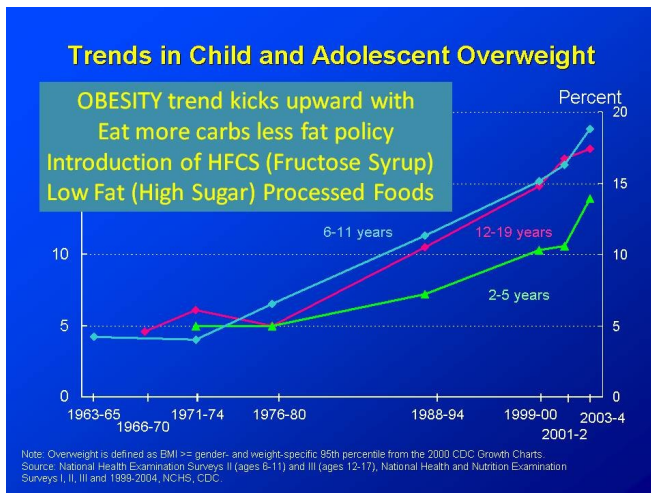
Being told you have 'high cholesterol' is commonly taken as a sign of an unhealthy destiny. Research suggests that for many elderly people the news that they have 'high cholesterol' is more often associated with good health and longevity<sup>1</sup>.

For over 50 years this has been a paradox, the 'High-Cholesterol Paradox'. What is really going on?

## Hypothesis becomes Dogma

In the 1950s the prestigious American MD, Dr Ancel Keys<sup>2</sup>, supported a popular theory that heart disease was caused by dietary Fats and Cholesterol (Lipids) circulating in the blood. In 1972 a British Professor, Dr John Yudkin<sup>3</sup>, published a book called 'Pure, White and Deadly' which proposed over-consumption of refined sugar as the leading cause of diabetes and heart disease. The science was contested by 'interested parties', and the matter was resolved by 'government decree' in a US Senate report. On Friday January 14th 1977, Senator George McGovern's Senate Select Committee on Nutrition and Human Needs published 'Dietary Goals for the United States'.

This document sided heavily with Dr Keys' lipid theory. Thus 'hypothesis became dogma', without the benefit of scientific proof. The McGovern report recommended that we consume more carbohydrates (sugar generating foods) with more limited amounts of fats, meat and dairy. Since the 1970s there has been a rise in the use of High-Fructose Corn Syrups in processed food, and the introduction of low-fat foods which tend to have added sugar to make them attractive to eat.



Until the 1970s there had been a small but consistent percentage of overweight and obese people in the population. By the 1980s obesity rates had begun to climb significantly. This sudden acceleration of obesity is very closely associated with the adoption of new high-sugar, low-fat formulations in processed foods - the consequences of the McGovern report recommendations being adopted around the world.

Advice to reduce our intake of saturated fats, obtained from meat and dairy, caused a rise in the use of plant based oils and so-called 'vegetable fats'. This was misleadingly promoted as healthy. The biochemical destiny of dietary 'Saturated Fat' is not the same as that of excess 'Carbohydrates and Sugars'.

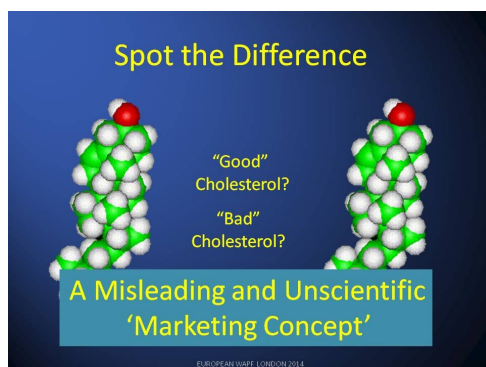
**Fats do not cause obesity or disease. It is the excess sugars (glucose and fructose - High Fructose Corn Syrup HFCS) which create abdominal obesity<sup>4</sup>.**

The erroneous idea, and fear, of artery blocking fats was exploited to market fat substitutes. Invite anyone talking about 'artery blocking fats' to hold a pat of butter in a closed fist. As the butter melts and runs out between their fingers, ask 'How do fats, which are evolved to be fluids at body temperature, block the vascular 'pipes' in our bodies?'

Plant oils are not the natural lipids for maintaining healthy human or animal cell membranes. Animal sourced fats, and essential fatty acids (EFA), are identical to those we require for the maintenance of the healthy human body.

Let us explore some more big anomalies in the last 40 years of dietary health guidance.

### Good Cholesterol? Bad Cholesterol? Spot the Difference?



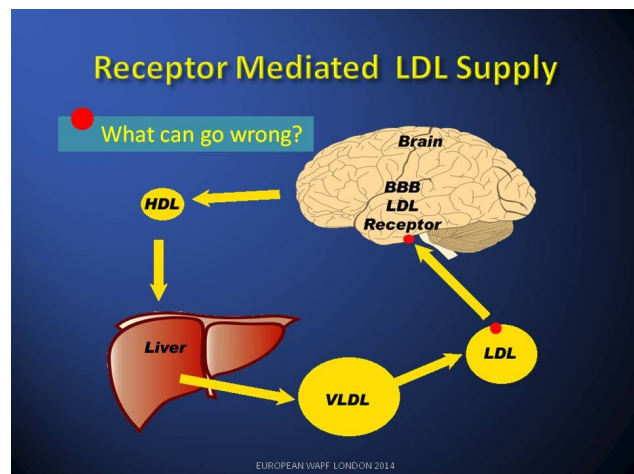
All biochemists can confirm that all cholesterol molecules throughout the known universe are identical in every respect. So how can there be 'good' or 'bad' cholesterol. It is now possible to frighten people with unscientific descriptions like 'Good' and 'Bad' when talking about cholesterol.

This single misleading description may have prevented a whole generation from knowing

the true causes of the very real disturbance in the levels of fatty nutrients (Lipids) circulating in our blood<sup>4</sup>.

## Healthy Lipids

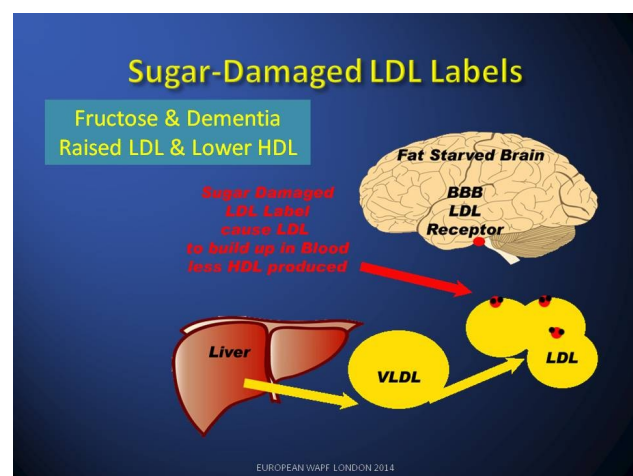
If the total blood serum cholesterol (TBSC) is high and the organs are getting enough lipids, the blood lipid circulation is healthy. The large parcels of fatty nutrients (LDL lipids) sent by the liver are consumed by our organs (receptor-mediated endocytosis) and the smaller fatty wrappers and left-over lipids (HDL Lipids) return to the liver. The Fatty Nutrients (LDL) and the recycled lipids (HDL) are in balance. Such a healthy-lipid 'High-Cholesterol' person is well nourished and likely to have a long and healthy life.



## Damaged Lipids

If the total blood serum cholesterol is high but the fatty nutrient droplets (LDLs) have sugar-damaged labels, the organs are unable to recognise and feed on them. The supply of fatty nutrients to organs is broken.

The liver continues to supply fatty nutrients (albeit with damaged LDL labels), but the organs' receptors are unable to recognise them. The organs thus become starved of their fatty nutrients. Like badly labelled parcels in a postal service, the sugar-damaged lipids build up in the blood (raised LDL) and fewer empty wrappers are returned to the liver (low HDL).



LDL (erroneously called 'bad' cholesterol) is raised in the blood, awaiting clearance by the liver. There is less HDL (erroneously called 'good' cholesterol) being returned by the organs.

High Cholesterol (high levels of total blood serum cholesterol TBSC) when caused by damage to the LDL lipid parcels is a sign that lipid circulation is broken. These fats (LDL) will be scavenged to become visceral fats, deposited around the abdomen. This type of damage is associated with poor health.

So it really doesn't matter how high your total blood serum cholesterol (TBSC) is. What really counts is the damaged condition of the blood's fatty nutrient parcels (LDL lipids). In our research review of metabolic syndromes<sup>4</sup> (e.g. diabetes, heart

disease, obesity, arthritis and dementia) we explained that the major cause of lipid damage was sugar-related.

### **Sugar Damage (AGEs)**

The abbreviation AGE (**A**dvanced **G**lycation **E**nd-product) is used to describe any sugar-damaged protein. As we age, excessive amounts of free sugars in the blood<sup>5</sup> may eventually cause damage quicker than the body can repair it. The sugars attach by a chemical reaction and the sugar called fructose is known to be 10 times more reactive, and therefore more dangerous than our normal blood sugar (glucose). Since the 1970s we have been using increasing quantities of refined fructose (from high-fructose corn syrup). Its appealing sweetness, and ability to suppress the 'no longer hungry' receptor<sup>6</sup> (ghrelin receptor) is driving excessive food intake. Its ability to damage our fatty nutrients and lipid circulation is also driving waist-line obesity and its associated health problems<sup>4,7</sup>.

### **Checking for Damage in our Lipids**

There is a 'simple to administer' commonly available blood test used to check for sugar-damage. It is used to check the proteins in the blood of people who are diabetic or at risk of becoming diabetic. It tests for Glycated Haemoglobin (HbA1c) by counting the proportion of damaged molecules (per 1000) of Haemoglobin protein in the blood (mmol/mol). Researchers looking at ways of testing for damage to lipids, have found that sugar-damaged blood protein test (HbA1c), presents a very reasonable approximation of the state of sugar-damage in the blood lipids. Until there is a good general test for sugar-damage in blood lipids, this test (HbA1c) could be a sensible surrogate. This is a better way of assessing health than a simple cholesterol test (TBSC).

Improved sugar-damaged blood protein (HbA1c) scores in diabetic patients is accompanied by improvements in their lipid profiles. This could be very useful to anyone wanting to improve health outcomes by managing lifestyle and nutrition.

### **Clinical Consequences of Lowering Cholesterol**

In 2008 Dr Luca Mascitelli asked me to examine a paper by Xia et al<sup>8</sup>. It was very interesting to note that lowering cholesterol by as little as 10% (molecular in cell walls) in the pancreas (pancreatic beta-cells) prevented the release of insulin (cholesterol-mediated exocytosis). This paper described a mechanism by which 'cholesterol lowering drugs' directly cause diabetes. It was known that in statin drug trials which looked at glucose (blood sugar) control there was poor blood-sugar control in the statin user groups. Since 2011 the USA government (FDA) required statins to carry a warning about the risk of causing diabetes<sup>9</sup>.

### **Memories are made of this - Cholesterol**

The healthy human brain may only be 5% of body weight but it requires over 25% of the body's cholesterol. The nervous system uses huge quantities of cholesterol for insulation, protection and structure (myelin). F W Pfrieger et al.<sup>10</sup> have shown that the formation of the memory (synapses) is dependent on good supplies of cholesterol.

Post-mortem studies show that depleted cholesterol levels in the cerebrospinal fluids are a key feature of dementias. It was also reported that behavioural changes and personality changes are associated with low levels of cerebrospinal cholesterol.

In another review paper on Dementia we commented extensively on the damage done by fructose and the depletion of cholesterol availability. Low cholesterol levels in the nervous system are not conducive to good mental health.

### **Consequences of Lowering Cholesterol**

Drug treatments which lower cholesterol are acknowledged to cause adverse side-effects (ADRs) in at least 10% of Statin users<sup>11</sup>. This figure may be as high as 30%.

Conservative estimates indicate that in at least 1% of patients the side-effects are serious enough to be life threatening (e.g. Rhabdomyelitis, Dementia, Behavioural Disorders and Violence).

Our review<sup>12</sup> found that cholesterol lowering therapies were implicated in:

- Damage to muscles (including the heart) and exercise intolerance<sup>13</sup>
- Increased risk of Dementias (Impaired Synaptogenesis and Neuro-transmission)<sup>14</sup>
- Failure of Myelin Maintenance (Multiple Sclerosis Risks)<sup>15</sup>
- Neuro-muscular problems, aches and pains (Amyotrophic Lateral Sclerosis)<sup>16</sup>
- Diabetes (Insulin release inhibited)<sup>8</sup>
- Poor Maintenance of Bones and Joints
- Suppression of protective skin secretions (Apo-B) and increased MRSA infection<sup>17</sup>

We have found compelling evidence that cholesterol-sulphate is vital to good vascular health<sup>18</sup> so the question is.....

### **Why would anyone want to lower cholesterol?**

### **What is needed is a lowering of damage to lipids - caused by sugar.**

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