



# The Scurvy-Heart Disease Connection: Solution to the Puzzle of Cardiovascular Disease

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I would like to congratulate Stanford University for addressing the need for preventive and natural answers to the number one cause of death in the industrialized world. I will present to you the facts that atherosclerosis, heart attacks and strokes are not diseases but the direct result of long-term vitamin deficiency. And therefore they can be prevented by natural means, without pharmaceutical drugs or surgical intervention.

Heart disease is an early form of the sailor's disease scurvy. In my presentation, I can only focus on the most compelling evidence. For more details, I encourage you to visit our research website.

All existing hypotheses of atherogenesis have one problem in common - they defy human logic. The theory that high cholesterol levels, oxidized LDL or bacteria damage the vascular wall would lead to the formation of atherosclerotic plaques along the entire vascular pipeline. Inevitably, peripheral vascular disease would be the primary manifestation of cardiovascular disease. This is clearly not the case.

It doesn't require a degree from Stanford or any other medical school – any layperson can solve the Plumber's riddle. The arteries, veins and capillaries in our body are a pipeline that is 60,000 miles long. But this pipeline fails in 90 percent of the cases at one specific spot: the coronary arteries, with the length of only one billionth of the total vascular pipeline. If bad water quality – for example, high cholesterol – would cause damage to this pipeline, it would clog everywhere, not just at one spot. Obviously, elevated cholesterol cannot be the cause of coronary artery disease.

The solution to the puzzle of cardiovascular disease, therefore, must lie in the explanation of coronary artery plaques as the predominant manifestation of cardiovascular disease. To solve this puzzle, we need to refocus our attention away from the bloodstream and its constituents toward the one and only relevant target: the stability of the vascular wall.

This animation shows the connection between cardiovascular disease and the sailor's disease scurvy. As opposed to animals, the human body cannot synthesize vitamin C. Ascorbate deficiency results in two distinct morphological changes of the vascular wall: impaired vascular stability due to decreased collagen synthesis and loss of the endothelial barrier function.

The sailors of earlier centuries died within a few months from hemorrhagic blood

loss due to lack of endogenous ascorbate synthesis combined with a vitamin-deficient diet aboard. When the Indians gave those sailors tea from tree barks and other vitamin-rich nutrition, blood loss was stopped and the vascular wall healed naturally.

Today, everyone gets some vitamin C and open scurvy is rare. But almost everyone suffers from chronic vitamin deficiency. Over decades, micro-lesions develop in the vascular wall, especially in areas of high mechanical stress such as the coronary arteries.

Just as in the sailor's disease scurvy, so does vitamin C induce the natural repair of the blood vessel wall in cardiovascular disease leading to a halt in progression and even a natural regression of vascular lesions.

In contrast to current models of atherogenesis, the scurvy-heart disease connection can answer all key questions in clinical cardiology today.

**Why do we get infarctions of the heart and not the nose or ears?** The answer can be reduced to two factors: structural impairment of the vascular wall due to vitamin deficiency combined with the mechanical stress from pulsatile blood flow in the coronary arteries. It is at this unique spot where the underlying structural impairment is exposed first.

**Why do we get arteriosclerosis, but not venosclerosis?** The cholesterol and infection theories would inevitably lead to clogging of veins and capillaries. The scurvy- heart disease connection provides the only logical answer to this phenomenon.

**Why don't animals get heart attacks, but people do?** Why are bears and other hibernators with cholesterol levels of 600 mg/dl not extinct from an epidemic of heart attacks? The answer: animals produce their own vitamin C in amounts between 1 and 20 grams each day, compared to the human body weight. These amounts of ascorbate are obviously sufficient to optimize the stability of their vascular walls – without any necessity for statins.

**Why are all-important risk factors for CVD closely connected to ascorbate deficiency, including diabetes, hyperlipdemia, homocysteinuria and others?** The common denominator of these metabolic disorders is to provide compensatory stability for the vitamin-deficient vascular wall. This is also the reason, why ascorbate deficiency increases fibrinogen and thromboxane levels while decreasing endothelial-derived relaxing factor (NO) and prostacyclin.

Let's turn to key evidence for the scurvy-heart disease connection. The guinea pig, like man, cannot synthesize ascorbate endogenously. In our published research, we demonstrated that, when guinea pigs are fed vitamin C only at the level of the human RDA they develop atherosclerosis. These vascular lesions are histologically indistinguishable from human atherosclerotic plaques. In contrast, the control animals receiving vitamin C levels of one teaspoon per day have clean arteries.

These experiments were confirmed by Meade and others in an ascorbate "knock-out" animal model. The first manifestation in these animals was the deterioration of the vascular wall, resembling early atherosclerosis in man.

We confirmed these results in a clinical study in patients with pre-existing coronary artery deposits measured by Ultrafast Computed Tomography.

Following a defined vitamin program, the progression of calcification significantly decreased and, in some cases, the disappearance of lesions was documented, as you can see in these X-ray CT pictures. Copies of the publication of this clinical study are available at this meeting or online.

The scurvy-heart disease connection means a paradigm shift in medicine from symptom-orientation to the only relevant preventive and therapeutic target: the stability of the vascular wall.

With the discovery of the scurvy-heart disease connection, the “world of heart disease” has ceased to be a plate and has become a globe. Now that we have identified the true nature of cardiovascular disease, its eradication is only a question of time. Ten years from now, the headlines of leading newspapers may read: “WHO proclaims heart disease as eradicated. The pharmaceutical market of statins and other symptom-oriented drugs have collapsed on Wall Street and the cardiology departments at Stanford and other medical schools are closing.”

On behalf of millions of patients with heart diseases, I call upon Stanford University and other medical institutions to accept their responsibility and join us in the eradication of cardiovascular disease.