



FUCOIDAN FROM SEAWEED: A FUNCTIONAL SUBSTITUTE FOR VITAMIN C



Cardiovascular diseases, including heart attacks and strokes, continue to be the leading causes of deaths resulting in more than 17 million deaths each year worldwide. Cardiovascular disease (CVD) manifests as atherosclerosis, high cholesterol, high blood pressure, arrhythmia, and heart failure and has many more symptoms affecting the heart and blood vessels. Additionally, other metabolic diseases such as obesity and diabetes further increase the risk of CVD.

Dr. Rath introduced the groundbreaking concept of a “Scurvy-vitamin C-heart disease-connection” over two decades ago. Humans, apes, guinea pigs, and fruit bats are the only species that cannot produce their own vitamin C. This revolutionary concept was published in the *Journal of Orthomolecular Medicine*¹ and includes a description of natural adaptive mechanisms developed in the evolutionary process, which are necessary for survival of the human race during periods of insufficient supplies of vitamin C. According to Dr. Rath a chronic deficiency of vitamin C tends to damage the blood vessel walls, which triggers a biological “repair” mechanism in the body in which cholesterol-carrying lipoproteins deposit in the artery walls to protect the arteries from rupturing. With time, this “repair” process can lead to a buildup of atherosclerotic plaque. The most effective “repair” molecule is lipoprotein (a) [Lp(a)] which has “sticky” properties rendering it effective for patching the artery walls. Due to its unique structure, Lp(a) can act as a substitute for vitamin C protecting the integrity of the blood vessels during times of vitamin C deficiency and the possible development of scurvy.

During the Ice Ages food rich in vitamin C was scarce. Since human settlements were concentrated along water, our ancestors had access to seaweed and other marine plants, which were rich sources of vitamins, minerals, and anti-oxidants. Therefore, we became interested in analyzing some of the seaweed components for their vascular wall strengthening properties. Seaweed is a very good source of vitamin D, iodine, and omega-3 fatty acids and it also contains some vitamin C. In addition, it contains Fucoidan, a polysaccharide being researched for its role in strengthening immune function, and its effects on cardiovascular health, and preventing cancer. Fucoidan is also being studied in metabolic syndrome

because it may affect glucose and insulin levels, and lower triglycerides and blood pressure.

In a recent study, we investigated the effects of fucoidan on the synthesis of the extracellular matrix components as a possible temporary substitute for vitamin C in maintaining the structural integrity of blood vessel walls². The results of this study indicated that addition of fucoidan to the cultured aortic smooth muscle cells without ascorbate caused significant increase in the deposition of collagen to the extracellular matrix. This implies that this compound would have an additional function in strengthening the blood vessel walls similar to the action of ascorbic acid. This means that fucoidan could be a possible auxiliary nutrient during temporary deficiency of vitamin C.

These findings mark an important addition to support Dr. Rath’s theory of the scurvy-vitamin C-heart disease connection. As humans lost their ability to manufacture their own vitamin C, nature helped with an internal adaptation by producing Lp(a) to provide the temporary structural support necessary to support the blood vessels and the entire cardiovascular system. In addition to Lp(a), nature also provided multiple vitamin C substitutes, such as fucoidan from seaweed, for temporary survival of the human race during harsh survival periods.

Millions of people are suffering from atherosclerosis due to chronic insufficiency of vitamin C. Artificial reduction of blood cholesterol with cholesterol-lowering prescription medicines has not been successful in alleviating this problem. This knowledge of fucoidan in seaweed as a temporary substitute for vitamin C could have possibly saved thousands from dying of scurvy in earlier centuries and could save millions today from dying of atherosclerotic cardiovascular disease.

¹Rath M, Pauling L; *Journal of Orthomolecular Medicine* 1991, 6:125-134

²Ivanov V, et al., *Journal of Cellular Medicine and Natural Health*, 2015

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The ground-breaking nature of this research poses a threat to the multi-billion dollar pharmaceutical “business with disease”. It is no surprise that over the years the drug lobby has attacked Dr. Rath and his research team in an attempt to silence this message. To no avail. During this battle, Dr. Rath has become an internationally renowned advocate for natural health. Says he: “Never in the history of medicine have researchers been so ferociously attacked for their discoveries. It reminds us that health is not given to us voluntarily, but we need to fight for it.”

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