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FILE: ■ French Maritime Pine (*Pinus pinaster*)

■ Pycnogenol®

■ Coenzyme Q₁₀

■ Cardiovascular Health

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RE: Pycnogenol® and CoQ₁₀ for Cardiovascular Health

Watson RR. Nutraceutical synergism: Pycnogenol® and coenzyme Q₁₀ enhance cardiovascular health. *Evid Based Integrative Med.* 2006; 2(2):67-70.

Pycnogenol® (Horphag Research, Ltd; France) is the patented extract of French maritime pine (*Pinus pinaster*). Coenzyme Q₁₀ (CoQ₁₀) is a compound that is synthesized by the human body. As people age, they produce less CoQ₁₀. Low levels of CoQ₁₀ are associated with many conditions, including cardiovascular ailments. Both Pycnogenol and CoQ₁₀ are popular dietary supplements, and both are used as antioxidants and to improve cardiovascular health.

CoQ₁₀ is an essential cofactor in the mitochondrial electron transport chain, and it is ubiquitous in the human body. CoQ₁₀'s aliphatic side chain makes it lipid-soluble. This enables CoQ₁₀ to stick to low-density lipoprotein (LDL) cholesterol and protect it from oxidation. Low levels of CoQ₁₀ are found in patients with idiopathic dilated cardiomyopathy, postmyocardial infarction, and other cardiac dysfunctions, as well as in diabetes mellitus and cancer. Interestingly, statin drugs (taken to lower cholesterol) have the side effect of decreasing CoQ₁₀ levels. Pycnogenol contains high levels of procyanidins, phytochemicals with potent antioxidant activity. In contrast to CoQ₁₀, Pycnogenol is water-soluble and has an affinity for hydroxy proline-rich proteins, including collagen and elastine. Together, CoQ₁₀ and Pycnogenol are claimed to have a "synergistic antioxidant effect" against peroxidation of lipids by adenosine diphosphate and iron. In other words, the antioxidant effect of CoQ₁₀ and Pycnogenol together is greater than the sum of their separate antioxidant effects. In addition to scavenging free radicals, CoQ₁₀ can regenerate vitamin E from its oxidized form, and Pycnogenol can regenerate vitamin C from its oxidized radical. In addition, vitamin C regenerates vitamin E from its radical. Thus, CoQ₁₀ and Pycnogenol extend the life of antioxidant vitamins "in a complex antioxidant network."

By itself, Pycnogenol binds to collagen and strengthens brittle blood vessel walls. This action lowers blood plasma filtration into tissue. Pycnogenol improves blood circulation by stimulating more efficient endothelial nitric oxide (NO) production. In the bloodstream, NO reduces blood platelet activation, thus reducing blood clotting and preventing thrombosis. NO also increases arterial dilation, leading to lower blood pressure. Some small pilot studies indicate that CoQ₁₀ may reduce blood pressure. In addition, Pycnogenol and CoQ₁₀ likely work together to reduce atherosclerosis risk. CoQ₁₀ protects low density lipoprotein (LDL "bad") cholesterol from oxidation, while Pycnogenol increases levels of high density lipoprotein (HDL "good") cholesterol.

The available evidence suggests that CoQ₁₀ and Pycnogenol work together to protect cardiovascular health through a synergistic antioxidant effect and by other mechanisms of action. The health benefits of both CoQ₁₀ and Pycnogenol continue to be studied. More study is needed to determine if CoQ₁₀ reduces blood pressure. In addition, more research on potential synergistic effects of CoQ₁₀ and Pycnogenol, as well as other dietary supplement combinations is needed.

—*Marissa Oppel, MS*

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