

## Cocoa

Since the discovery that cocoa benefits are not just limited to pleasing the taste buds, cocoa has continued to gather support for its healthful properties. Cocoa, the primary component of chocolate, is a rich source of epicatechin, a flavonol believed to be responsible for the health benefits of chocolate. Teas (green and black) and red wine are also noted for their epicatechin content, but cocoa has a higher concentration.<sup>1</sup>

A study published in the *Journal of the American College of Cardiology* showed that consuming cocoa flavonols improved vascular function in persons with type II diabetes. Loss of vascular function is one of the primary markers for the development of cardiovascular disease. This is especially true in diabetic individuals.

In a double-blind trial conducted by Malte Kelm, M.D., and colleagues at University Hospital RWTH Aachen in Germany, 41 patients with type II diabetes were given a beverage containing cocoa flavonols three times a day for 30 days. Immediate improvement in vascular health (measured by the ability of the brachial artery to relax) was observed in the group with the highest flavonol consumption. According to doctor Kelm, these results demonstrate that dietary flavonols might have an important impact as part of a healthy diet.

Previous studies have shown that cocoa benefits are not limited to persons with type II diabetes. The flavonols in cocoa may also help keep blood pressure down and help maintain heart health in persons without specific risk factors. Cocoa is believed to promote optimal cardiovascular health by activating the nitric oxide system.<sup>2</sup> Nitric oxide is an important molecule responsible for controlling multiple functions within the body, including the dilation of blood vessels<sup>2</sup> and platelet aggregation (clot formation)<sup>3</sup>. A decreased release of nitric oxide into the arterial wall is associated with multiple warning signs of cardiovascular disease, including hypertension and the formation of atherosclerotic plaque.

Cocoa flavonols are a particularly significant type of flavonoid molecule. A recent analysis has found that not all flavonoids and sources of flavonoids provide equal benefits. Using data from the 133 studies, researchers found wide variations in effects, depending on the nature of the flavonoid and the food source. Of more than 6,000 different flavonoids that have been discovered in various plants, a few stand above the rest in the benefits they provide. Chocolate flavonoids are especially effective in their support of cardiovascular health. Flavonoids from chocolate were associated with a 4 percent increase in blood flow, and a reduction in systolic and diastolic blood pressure.<sup>4</sup> On the other hand, black tea, which also contains flavonoids, was linked to increases in systolic and diastolic blood pressure.<sup>4</sup>

Today, Americans consume an average of about 12 pounds of chocolate per person, per year and this may not be a bad thing. While milk chocolate is still the favorite, the health-promoting qualities of flavonols are attributed to the dark variety.

1. Ki Won Lee, Young Jun Kim, Hyong Joo Lee, and Chang Yong Lee. Cocoa Has More Phenolic Phytochemicals and a Higher Antioxidant Capacity than Teas and Red Wine. *Journal of Agricultural and Food Chemistry* 2003; 51(25) 7292–7295.

2. Fisher ND, Hughes M, Gerhard-Herman M, Hollenberg NK. Flavonol-rich cocoa induces nitric-oxide-dependent vasodilation in healthy humans. *J Hypertens*. 2003 Dec;21(12):2281-6.
3. Rein D, Paglieroni TG, Wun T, Pearson DA, Schmitz HH, Gosselin R, and Keen CL. Cocoa inhibits platelet activation and function. *Am J Clin Nutr* 2000;72:30-5.
4. Hooper L, Kroon PA, Rimm EB, Cohn JS, Harvey I, Le Cornu KA, Ryder JJ, Hall WL, Cassidy A. Flavonoids, flavonoid-rich foods, and cardiovascular risk: a meta-analysis of randomized controlled trials. *Am J Clin Nutr* 2008;88:38-50.

Created by Larisa Wright