

<http://www.ncbi.nlm.nih.gov/pubmed/12589329>

[J Am Diet Assoc.](#) 2003 Feb;103(2):215-23.

Cocoa and chocolate flavonoids: implications for cardiovascular health.

[Steinberg FM](#)¹, [Bearden MM](#), [Keen CL](#).

Abstract

This paper offers a review of current scientific research regarding the potential cardiovascular health benefits of flavonoids found in cocoa and chocolate. Recent reports indicate that the main flavonoids found in cocoa, flavan-3-ols and their oligomeric derivatives, procyanidins, have a variety of beneficial actions, including antioxidant protection and modulation of vascular homeostasis. These findings are supported by similar research on other flavonoid-rich foods. Other constituents in cocoa and chocolate that may also influence cardiovascular health are briefly reviewed. The lipid content of chocolate is relatively high; however, one third of the lipid in cocoa butter is composed of the fat stearic acid, which exerts a neutral cholesterolemic response in humans. Cocoa and chocolate contribute to trace mineral intake, which is necessary for optimum functioning of all biologic systems and for vascular tone. Thus, multiple components in chocolate, particularly flavonoids, can contribute to the complex interplay of nutrition and health. Applications of this knowledge include recommendations by health professionals to encourage individuals to consume a wide range of phytochemical-rich foods, which can include dark chocolate in moderate amounts.

<http://www.ncbi.nlm.nih.gov/pubmed/16572598>

[Nutr Rev.](#) 2006 Mar;64(3):109-18.

The emerging role of flavonoid-rich cocoa and chocolate in cardiovascular health and disease.

[Engler MB](#)¹, [Engler MM](#).

Abstract

Cocoa and chocolate have recently been found to be rich plant-derived sources of antioxidant flavonoids with beneficial cardiovascular properties. These favorable physiological effects include: antioxidant activity, vasodilation and blood pressure reduction, inhibition of platelet activity, and decreased inflammation. Increasing evidence from experimental and clinical studies using cocoa-derived products and chocolate suggest an important role for these high-flavanol-containing foods in heart and vascular protection.

The neuroprotective effects of cocoa flavanol and its influence on cognitive performance.

[Nehlig A](#)¹.

Abstract

Cocoa powder and chocolate contain numerous substances among which there is a quite large percentage of antioxidant molecules, mainly flavonoids, most abundantly found in the form of epicatechin. These substances display several beneficial actions on the brain. They enter the brain and induce widespread stimulation of brain perfusion. They also provoke angiogenesis, neurogenesis and changes in neuron morphology, mainly in regions involved in learning and memory. Epicatechin improves various aspects of cognition in animals and humans. Chocolate also induces positive effects on mood and is often consumed under emotional stress. In addition, flavonoids preserve cognitive abilities during ageing in rats, lower the risk for developing Alzheimer's disease and decrease the risk of stroke in humans. In addition to their beneficial effects on the vascular system and on cerebral blood flow, flavonoids interact with signalization cascades involving protein and lipid kinases that lead to the inhibition of neuronal death by apoptosis induced by neurotoxicants such as oxygen radicals, and promote neuronal survival and synaptic plasticity. The present review intends to review the data available on the effects of cocoa and chocolate on brain health and cognitive abilities.