Chocolate: More than just a holiday treat?

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Chocolate may just be one of the most sought after foods in the world. Used as a candy or as a flavor in baked goods, ice cream and other treats, chocolate is a significant social food that is much craved in many societies. Some people even appear to become addicted to it (1,2) which may have some negative effects (1,2). The interesting news is that chocolate may also have some health benefits due to some of its components which include antioxidants, flavonoids, polyphenols and some trace minerals. In addition, chocolate contains methylxanthines including caffeine, theobromine, and theophylline.

Cardiovascular benefits are a primary area of inquiry among those studying chocolate and health. There is evidence that indicates that chocolate may lower blood pressure (3-6), may decrease or inhibit buildup of plaque on artery walls (7,8), may help maintain healthy levels of cholesterol, may have inhibitory effects on the aggregation of platelets (3), and may decrease serum concentrations of C-reactive protein (9). Such effects would be expected to help maintain cardiovascular health and help prevent heart attack and stroke. Some support for such a conclusion is provided by a small Dutch study of 470 elderly men tracked over 15 years. The results of that study indicated that men whose diets included cocoa were less likely to die from cardiovascular disease and had slightly lower blood pressure than men whose diets did not contain significant levels of
cocoa (4). The Kuna Indians of Panama also have a very low level of cardiovascular disease which some reports have attributed to the cocoa in their diets (10-12).

Of course, such observations regarding cardiovascular function and chocolate require extensive research in order to be confirmed (13,14). Such research must include well planned clinical trials. Clear, bona fide, physiological or biochemical mechanisms that explain the results of the clinical trials also need to be established before any solid conclusions can be made. One possible physiological/biochemical mechanism currently proposed is that the antioxidants in chocolate may prevent the oxidation of molecules which would otherwise contribute to plaque buildup (7).

A few studies, all of which have been performed in the laboratory, vaguely suggest that chocolate may lower the risk of cancer (15,16). Possibly due to the flavonoids and antioxidants found in chocolate (15,16), such preliminary observations will require a lot more work before any scientific statement can be made. For example, one key question is if the amount of flavonoids found in different preparations of chocolate are actually high enough to have any biological activity against a tumor in an individual.

Chocolate does contain some nutrients in small amounts that are beneficial in the diet (17).

These nutrients include small amounts of calcium, potassium, magnesium, copper, phosphorus, and iron. Chocolate also contains a small amount of plant based protein and some unsaturated fatty acids. If the chocolate contains milk, there will be a small amount of the healthy components of milk present.

Flavonoids in chocolate may have some anti-inflammatory properties (18,19). Agents with anti-inflammatory properties may have some positive effects on heart health (18,19), and may influence immune response, function and/or development (20,21). However, the effects of chocolate on the immune system are not ready for the testable stage in a clinical trial and will require significant amounts of basic laboratory bench work before any proposals can be made.

Since foods containing chocolate usually include added sugar, there have been concerns about obesity and diabetes. However, the sugar content in good quality chocolate tends to be low and is not a critical factor in healthy
people who enjoy chocolate as a special treat. Chocolate products also contain fat. Again, for those individuals who are healthy and enjoy chocolate products in moderation, the fat content is not critical. And since chocolate is a plant based product, chocolate contributes no cholesterol to a food product.

Chocolate does contain methylxanthines. Methylxanthines are based on purine and have mild stimulating effects on the body. Three methylxanthines found in chocolate are caffeine, theophylline, and theobromine. Both caffeine and theophylline are present in very low concentrations in chocolate. Concern about caffeine levels in chocolate is generally unwarranted since the levels of this stimulatory molecule are much lower than coffee, a drink which is known to be safe for healthy individuals (22,23).

Concern about the theobromine content is warranted, but not for humans. Humans are able to safely metabolize theobromine; however many animals, including household pets, are not able to metabolize theobromine. This means animals, especially household pets including dogs, cats, birds, and others should never be given chocolate to eat.

Theobromine has shown some promise as an inhibitor of coughing (24); however chocolate is not a proposed treatment for cough.

So what’s the conclusion? Enjoy chocolate! There is some evidence that it is heart healthy and it may have positive effects on the discomfort of inflammation. When eaten in reasonable amounts on special occasions by healthy individuals, it is not a significant source of calories or caffeine. Just keep in mind that chocolate is not a treatment for cardiovascular disease. If you believe you have cardiovascular disease, or have a question regarding your cardiovascular health, you must seek the advice of your health care provider.

References


