

CHOCOLATES: CAN THEY REALLY BE GOOD FOR MY HEALTH?!

Hopeful “CHOCOHOLICS”

Taboo...unhealthy...addictive...fattening.... cancer-causing... Why are the foods we enjoy and find pleasure in typically NOT good for our health? In the age of technology and abundance of information, people are searching for a fun food that is truly healthy! Is chocolate THAT food? News articles abound regarding the promising health benefits of eating dark chocolate. A “study” published in the American Journal of Clinical Nutrition in 2001 received headline news when there were claims that adding chocolate and cocoa “to a healthy diet” could provide antioxidant benefits and increase the “good” cholesterol (HDL cholesterol) in an individual. The study actually involved only 23 subjects and was funded by the American Cocoa Research Institute, the research group for the Chocolate Manufacturers Association. Good P.R. strategy? (http://www.medicationsense.com/articles/july_sept_03/chocolate.html).

There seem to be two camps addressing the question surrounding possible health benefits from chocolate consumption. Understandably, Hershey, Mars, and other chocolate interest groups are touting the antioxidant and nutrient contents of this food and claiming that consumption of it may lower blood pressure, reduce heart attack and cancer risk, and solve mild depression symptoms and fatigue. Mars has certainly seen swift sales in recent years of their dark chocolate M&Ms product, for which they can charge more. Due to the headlines that dark chocolate could be beneficial, the supply and demand principle has kicked in. The many health professionals who share an affinity for chocolate would love to make a positive recommendation instead of always telling clients about the foods that shouldn't be eaten.

The other camp still warns that chocolate is a high fat food, and that the jury is still out on whether the saturated fat in chocolate is truly neutral and does not increase blood cholesterol levels. The antioxidants of chocolate may not be readily available for use by the body and there is some challenge to the notion that chocolate consumption can really raise the beneficial high density lipoproteins (HDLs) in one's circulation.

But we're getting ahead of ourselves; let's learn how cocoa and chocolate are derived.

The Making of Chocolate

The **Cacao tree** grows in tropical regions that stretch 10-20 degrees north or south of the equator. These trees need rich, well drained soil, abundant rainfall (78 inches annually!), and temperatures that must not fall below 59^o F in order for the Cacao tree to survive. Foot-long fruit pods each contain 20-40 seeds or cacao beans. The primary cultivators of the Cacao tree include Indonesia and Papua New Guinea, Ghana, Nigeria, The Ivory Coast, Brazil, Cameroon, Madagascar, Dominican Republic, Ecuador, Costa Rica, Guatemala, Mexico, Cuba, Granada and Samoa. Cacao beans are harvested and fermented to develop their aroma and characteristic chocolate flavor. Following fermentation, the beans are sun-dried, cleaned and packed for either export or domestic use. Beans are later roasted to develop the final chocolate flavor and color desired and then ground and liquefied to produce the pure chocolate liquor which can be made into either cocoa butter or cocoa solids. The ground cocoa bean is traditionally combined with sugar and cocoa butter to yield most of our marketed chocolate confections. Fine chocolate used to be available solely to the wealthiest individuals but the invention of the chocolate press

provided for quick, economical extraction of cocoa butter from the cacao bean. Today, it is estimated that the average American consumes almost 11 pounds of chocolate annually.

Types of Chocolate

- **White Chocolate:** Made from cocoa butter, sugar, milk solids, fat emulsifier, vanilla and other flavorings. The low content of cocoa solids makes it prohibitive in some countries to be labeled as “chocolate”. Until standards for white chocolate, specifically, are made, some manufacturers can make “white chocolate” by substituting cocoa butter with a cheaper saturated vegetable fat that has both less flavor and more heart-unfriendly fats. The FDA currently does not label white chocolate as “chocolate”.
- **Milk Chocolate:** This sweet chocolate typically contains 10-20% cocoa solids (cocoa and cocoa butter) and 12+ % milk solids.
- **Dark Chocolate:** Can be sweet, semi-sweet, bittersweet or unsweetened. It may contain up to 12% milk solids. Sweet dark chocolate must contain at least 35% cocoa solids.
 - Sweet Dark Chocolate has 35-45% cocoa solids.
 - Semi-sweet Dark Chocolate is the classic form of dark chocolate used in baking cakes, brownies and cookies and has 40-62% cocoa solids.
 - Bittersweet Dark Chocolate contains 60-85% cocoa solids and is also often used in baking. More cocoa solids mean less sugar; recipes specifying bittersweet chocolate should not be substituted with sweet or semi-sweet chocolate.
 - Unsweetened Dark Chocolate contains almost 100% cocoa solids; 50% of it is fat in the form of cocoa butter. It is too bitter to eat as is.

Nutrient Content of Chocolate

Fat Content: A 1.5 oz. bar of either milk chocolate or semi-sweet dark chocolate contains approximately 12 grams of fat. Approximately 50-55% of total calories in chocolate are derived from fat, at 9 calories per gram. The fat found naturally in the cacao bean contains 61% as saturated fats, 36% as monounsaturated fat, and the remaining 3% as polyunsaturated fats. More than half of the saturated fats in natural chocolate are from stearic acid, which has more recently been shown via research to have a neutral effect on blood cholesterol levels. Other plant-based saturated fats, such as palm kernel and palm oil, are believed to raise cholesterol levels. Most of the monounsaturated fat in cocoa butter comes from oleic acid, which is also the main form of fat in popular olive oil. Milk chocolate products will have milk fat added, which contains some cholesterol. When the cocoa butter is separated in processing to produce cocoa powder, most of the fat is removed. The trade off with cocoa powder: the alkalizing process (“Dutch” cocoa) reduces the antioxidant potential since the alkali destroys approximately two thirds of the flavonoid compounds.

Carbohydrate Content: As a plant food, natural cacao beans will contain carbohydrate in the form of starch and both insoluble and soluble fibers. As you may guess, most of the sugar found in the chocolates we eat is added by the manufacturers, to counter the naturally bitter flavor of the cacao bean. A milk chocolate bar will contain about 24 grams of carbohydrates.

Other Notable Compounds & Nutrients:

- **Stimulant effect:** Chocolate contains typically a very small amount of caffeine (almost comparable to the caffeine content of a “decaf” serving) as well as theobromine, a mild stimulant. The short lived pick-me-up effect of eating chocolate likely comes more from the simple sugars added in manufacturing.

- **Antioxidants:** Flavonoids which are also found in teas, red wine and many fruits and vegetables have been identified in the cacao (cocoa) bean. There is on-going research into whether purer forms of dark chocolate may actually supply some beneficial effects such as increased HDLs. That is not the case with our beloved milk chocolate bars.
- **Serotonin:** Cocoa and chocolate can increase the level of serotonin in the brain. Coupled with phenyl ethylamine, a mild antidepressant type of compound found in chocolate, there may be something to the notion that mild mental depression can be temporarily lifted through a serving of chocolate.
- **Essential vitamins and minerals:** As with most plant-based foods, the cocoa bean contains some minerals including magnesium, potassium and iron, zinc and copper, as well as trace amounts of A, C, E, and B vitamins. However, a serving or three of chocolate will not significantly contribute to one's vitamin or mineral needs of the day and it will contribute noticeably to one's fat intake.

So What's The Bottom Line for Chocolate & the Health-Conscious?

As much as we would like to believe that chocolate consumption has health benefits beyond the pure taste and enjoyment factor, the reality is that we eat processed chocolates with fewer active flavonoids (types of polyphenol compounds known to have antioxidant benefits) than originate in the cacao bean and more of added sugars, milk fats and/ or hydrogenated oils. Choosing a high quality chocolate that contains 70% or more of cocoa is more likely to have some added pay-off with health, but the trade off needs to be considered. As a high fat food, "more" is not likely to be better for you. By selecting chocolates with less sugar and a higher percent of cocoa solids, you have more opportunity to escape the downsides to chocolate as a candy. Preparing chocolate items such as muffins, cakes, and brownies with powdered cocoa as the chocolate ingredient and canola oil as the fat ingredient is more likely to produce a heart healthy dessert. You can avoid saturated fats from chocolates and still enjoy the great chocolate flavor. The science jury is still out on the issue of whether we benefit from the polyphenol compounds, or antioxidants, which exist in the raw cacao bean once it has been processed into the chocolate we commonly consume. But you can be sure that companies like Hersheys and Mars will continue to pursue answers and we, the chocolate lovers, will be paying close attention to continued findings.

Additional Reading & References

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