

Chocolate

Written by W.J.Pais

Chocolate is a typically sweet, usually brown, food preparation of [Theobroma cacao](#) seeds, roasted and ground, often flavored, as with vanilla. It is made in the form of a liquid, paste or in a block or used as a flavoring ingredient in other sweet foods

The seeds of the cacao tree have an intense [bitter](#) taste and must be [fermented](#) to develop the flavor.

After fermentation, the beans are dried, cleaned, and roasted. The shell is removed to produce cacao nibs, which are then ground to [cocoa mass](#), pure chocolate in rough form. Because the cocoa mass is usually liquefied before being molded with or without other ingredients, it is called [chocolate liquor](#). The liquor also may be processed into two components: [cocoa solids](#) and [cocoa butter](#). Unsweetened [baking chocolate](#) (bitter chocolate) contains primarily cocoa solids and cocoa butter in varying proportions. Much of the chocolate consumed today is in the form of [sweet chocolate](#), a combination of cocoa solids, cocoa butter or other fat, and sugar. [Milk chocolate](#) is sweet chocolate that additionally contains milk powder or condensed milk. [White chocolate](#) contains cocoa butter, sugar, and milk but no cocoa solids.

Cocoa solids are one of the richest sources of [flavanol](#) [antioxidants](#).^[3] They also contain [alkaloids](#) such as [theobromine](#), [phenethylamine](#) and [caffeine](#).

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These have physiological effects on the body and are linked to

[serotonin](#)

levels in the brain. Some research has found that chocolate, eaten in moderation, can lower blood pressure.

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The presence of theobromine renders chocolate toxic to some animals,

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especially dogs and cats.

Chocolate has become one of the most popular food types and flavors in the world, and a vast number of foodstuffs involving chocolate have been created. [Chocolate chip cookies](#) have become very common, and very popular, in most parts of Europe and North America. Gifts of chocolate molded into different shapes have become traditional on certain holidays. Chocolate is also used in cold and hot beverages such as

[chocolate milk](#)

and

[hot chocolate](#)

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Although cocoa originated in the Americas, today Western Africa produces almost two-thirds of the world's cocoa, with [Côte d'Ivoire](#) growing almost half of it.

European Union regulations require dark chocolate to have at least 60% cocoa solids, milk chocolate 25%, and white chocolate none.

Chocolate liquor is blended with the cocoa butter in varying quantities to make different types of chocolate or couvertures. The basic blends of ingredients for the various types of chocolate (in order of highest quantity of cocoa liquor first), are:

- Dark chocolate: sugar, cocoa butter, cocoa liquor, and (sometimes) vanilla
- Milk chocolate: sugar, cocoa butter, cocoa liquor, milk or milk powder, and vanilla
- White chocolate: sugar, cocoa butter, milk or milk powder, and vanilla

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Usually, an [emulsifying agent](#), such as [soy lecithin](#), is added, though a few manufacturers prefer to exclude this ingredient for purity reasons and to remain [GMO](#)-free, sometimes at the cost of a perfectly smooth texture. Some manufacturers are now using [PGPR](#), an artificial emulsifier derived from castor oil that allows them to reduce the amount of cocoa butter while maintaining the same [mouthfeel](#).

The texture is also heavily influenced by processing, specifically conching (see below). The more expensive chocolate tends to be processed longer and thus have a smoother texture and mouthfeel, regardless of whether emulsifying agents are added.

Different manufacturers develop their own “signature” blends based on the above formulas, but varying proportions of the different constituents are used. The finest, plain dark chocolate couvertures contain at least 70% cocoa (both solids and butter), whereas milk chocolate usually contains up to 50%. High-quality white chocolate couvertures contain only about 35% cocoa butter.

Producers of high-quality, small-batch chocolate argue that mass production produces bad-quality chocolate. ^[44] Some mass-produced chocolate contains much less cocoa (as low as 7% in many cases), and fats other than cocoa butter. Vegetable oils and [artificial](#) vanilla flavor are often used in cheaper chocolate to mask poorly fermented and/or roasted beans.

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In 2007, the Chocolate Manufacturers Association in the United States, whose members include [Hershey](#), [Nestl e](#), and [Archer Daniels Midland](#), [lobbied](#) the [Food and Drug Administration](#) (FDA) to change the legal definition of chocolate to let them substitute [partially hydrogenated vegetable oils](#) for cocoa butter, in addition to using artificial sweeteners and milk substitutes.

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Currently, the FDA does not allow a product to be referred to as "chocolate" if the product contains any of these ingredients.

The penultimate process is called conching. A conche is a container filled with metal beads, which act as grinders. The refined and blended chocolate mass is kept in a liquid state by frictional heat. Chocolate prior to conching has an uneven and gritty texture. The conching process produces cocoa and sugar particles smaller than the tongue can detect, hence the smooth feel in the mouth. The length of the conching process determines the final smoothness and quality of the chocolate. High-quality chocolate is conched for about 72 hours, and lesser grades about four to six hours. After the process is complete, the chocolate mass is stored in tanks heated to about 45–50° C (113–122° F) until final processing.[flow gently over a chocolate fountain to serve as dessert fondue.