

Chapter 5

Health Benefits of Tea: Beneficial Effects of Tea on Human Health

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ABSTRACT

*Tea is the second most widely consumed beverage throughout the world, after water. “Tea” is referred to the aromatic beverage prepared by incubating cured leaves of the plant *Camellia sinensis* with hot or boiling water. The origin of tea has remained a mystery and has been associated with legends in the Chinese history. Under experimental conditions in laboratory, tea has been reported to act as an anti-cancer agent in various models of lung, pancreas, liver, breast, fore-stomach, oesophagus, duodenum, colon, and skin cancers induced by chemical carcinogens. Tea also contains a wide range of antioxidants and has been found to possess several others health benefits. This chapter summarizes the history behind its use, various health benefits, and current state of scientific literature and epidemiological evidence of its usefulness.*

SOURCE

Although tea in itself is presented in various forms throughout the world (white, yellow, green, Oolong and black) but there are other variants like “herbal tea” which does not contain any *C. sinensis* leaves and is usually referred to the various infusions of herbs or fruits. All the variants of tea essentially originate from the same botanical source but differ in the type of processing done to obtain specific flavour and properties.

The tea plant is an endemic evergreen shrub of the continent of Asia (east and southwest regions), which prefers tropical and sub-tropical climatic conditions with abundant rainfall and heights in the range of 2000-6500 feet above sea level. Although the quality of tea is directly related to greater heights at which they are grown, but several other popular tea variants are also grown at lower heights (near sea level). Supposedly it is the cool climate (at greater heights) which restricts growth of the leaves allowing

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more flavours to get accumulated in them. An undisturbed tea plant can grow up to 30 feet in height, but usually they are pruned to a height to 3-5 feet to favour plucking of their tender leaves (which are then used for further processing). Pruning process also favours the growth of new leaves and this method is systematically used in commercial tea gardens to increase leaf harvesting. These tea bushes, if properly maintained, have a life span of over 100 years. The quality of tea plant gardens can be maintained by vegetative propagation of better quality plants for generations, thus allowing sustained supply of superior tasting tea.

Tea is primarily obtained from two variants of the *Camellia* plant- *Camellia sinensis* var. *sinensis* (used for most Chinese, Formosan, Japanese and Darjeeling tea), and *C. s. var. assamica*, (used in fermented Chinese tea and most Indian teas). The Assam tea type was characterized by large leaves and strong taste, while the Chinese variant is famous for its delicate flavour and smaller leaf size. The process of producing high quality tea starts right from the careful hand plucking of the tea leaves where “two leaves with a bud” is the usual norm. These leaves are then processed further, following different methods, to produce a variety of tea types. A summary of the various methods employed is given below and the final product obtained is depicted in Table 1.

- **Wilting:** Involves leaving the freshly harvested tea leaves on racks (whether under the sun or in indoor environment) for 12-24 hours during which the leaves loose much of their water content and become soft and pliable.
- **Bruising:** This method induces breakage of the tea leaves (either tossed in baskets or involves crushing of the leaves) which allows release of the natural enzymes.
- **Oxidation:** In this process, the tea leaves are maintained in a controlled environment (heat and moisture controlled) for the natural oxidation to take place. During this period, natural enzymes break down the tannins and/or transform them to yield the desired flavour and aroma. Most of the chlorophyll content is also broken down during this step. Different types of tea are prepared by controlling the duration of oxidation, such as 5-40% oxidation is used to make light oolong tea whereas 40-60% oxidation helps in making darker oolong variants. To produce black tea, a complete oxidation procedure is preferred.
- **Fixation:** This step is very important as it involves stopping the oxidation process and thus is used as a control point during tea production. Tea leaves are slightly heated or baked to stop the enzymatic oxidation process and to remove any undesirable aroma from the tea leaves, but care is taken so as to preserve the desired aroma and polyphenols which results in refined flavour.

Table 1. Processes involved in the production of various types of tea

Process	Wilting	Bruising	Oxidation	Fixation	Yellowing	Shaping	Drying	Curing	Final Product
Plucking of tea leaves	✓			✓		✓	✓	✓	Post fermented tea
				✓		✓	✓		Green tea
				✓	✓	✓	✓		Yellow tea
	✓			✓		✓	✓		White tea
	✓	✓	✓	✓		✓	✓	✓	Oolong tea
	✓	✓	✓			✓	✓		Black tea

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