



## REVIEW ON GREEN TEA

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### ABSTRACT :-

- ❖ Green, black, and oolong teas all come from the same plant, *Camellia sinensis*, but are prepared using different methods. To produce green tea, leaves from the plant are steamed, pan fried, and dried.
- ❖ Green tea as a beverage or dietary supplement is promoted for improving mental alertness, relieving digestive symptoms and headaches, and promoting weight loss. Green tea and its components, including epigallocatechin-3-gallate (EGCG), have been studied for their possible protective effects against heart disease and cancer.
- ❖ Green tea is richer in antioxidants compared to other forms of tea. Tea is composed of polyphenols, caffeine, minerals, and trace amounts of vitamins, amino acids, and carbohydrates.

➤ **Key word** :- cardiovascular disease, Brain function, Antioxidant, etc.

## INTRODUCTION :

Tea is one of the most widely consumed beverages worldwide, and is the second-most consumed drink after water. It is produced from the leaves, buds, or delicate stems of the plants of the genus *Camellia*. The most widely used plant species for tea is *Camellia sinensis* Kuntze. Inhabitants of Europe, mainly Great Britain, are the largest consumers of tea (~540 mL) per day. However, on average across the world population, a person consumes ~120 mL of tea per day. The consumption of antioxidant-rich (like polyphenolics and flavonoids) fruits and vegetables is known to reduce the impact of different age-related diseases, including coronary heart disease and cancer. Polyphenols are chemical compounds with one or more phenolic groups per molecule . They may inhibit ROS induced damage to DNA, proteins and lipids, and produce inflammatory cytokines along with activating several signal transduction pathways .



## CLASSIFICATION OF GREEN TEA

<b>Kingdom</b>	<b>Plantae</b>
Subkingdom	Tracheobionta
Super-division	Spermatophyte
Division	Magnoliophyta
Class	Magnoliopsida
Sub-class	Dillenidea
Order	Theales
Family	Theaceae
Genus	<i>Camellia L.</i>
Species	<i>Camellia Sinensis</i>



## HISTORY :

The history of tea spreads across multiple cultures over the span of thousands of years. With the tea plant *Camellia sinensis* native to East Asia and probably originating in the borderlands of southwestern China and northern Burma. One of the earliest tea drinking is dated back to China's Shang dynasty, in which tea was consumed as a medicinal drink. An early credible record of tea drinking dates to the 3rd century AD, in a medical text written by Chinese physician Hua Tuo. It first became known to the western world through Portuguese priests and merchants in China during the early 16th century. Drinking tea became popular in Britain during the 17th century.

**TYPES :**

1. SENCHA
2. MATCHA
3. GYOKURO
4. GENMAICHA
5. KUKICHA
6. BANCHA
7. BILUOCHUN
8. TENCHA
9. KABUSECHA

**MORPHOLOGY :**

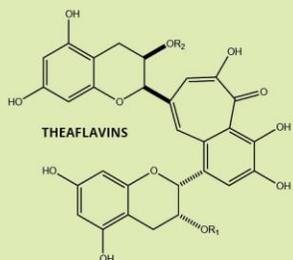
Tea plant is an evergreen shrub with large number of branches. The leaves appear glossy dark green, elongate ovate, roughly serrate, coriaceous, alternate and short-petiolate. While young leaves appear silver because they bear downy hairs on the surface (Gruenwald, 2007). Tea contains a number of constituents like caffeine (1-5%), xanthines, theobromine and tannins including flavonoids, polyphenols, fats and vitamin C.

**TEA COMPOSITION :**

Tea is reported to contain nearly 4000 bioactive compounds of which one third is contributed by polyphenols. Polyphenols are bonded benzene rings with multiple hydroxyl groups. Polyphenols are either flavonoids or non-flavonoids but chemicals found in tea are mostly flavonoids (Sumpio et al., 2006). They are secondary plant metabolites derived from the condensation reaction of cinnamic acid with three malonyl-CoA groups. A number of flavonoids are present but dietary flavonoids are usually categorized into six major groups.

# THE CHEMISTRY OF TEA

## POLYPHENOLS IN TEA



A strong cup of tea usually contains around 180-240mg of polyphenol compounds. Compounds called catechins are the building blocks of black tea polyphenols; they are oxidised to form theaflavins and thearubigins.

Theaflavins comprise 3-5% of black tea, and are responsible for its red-orange appearance.

'Thearubigins' is the term for a wide range of polyphenols whose structures remain largely unknown, but they are also thought to contribute to tea's colour & taste.



## THE EFFECT OF MILK ON POLYPHENOLS



The compounds in tea derived from catechins can have antioxidant effects on the body - research has shown these could have beneficial effects on cardiovascular health.

It's suggested that the casein proteins in milk could bind to polyphenols and as a result prevent their antioxidant effects, but research on this subject remains conflicted.

## BENEFITS :

- Contains healthy bioactive compounds.
- May improve brain function.
- Increases fat burning.
- Antioxidants may lower the risk of some cancers.
- May protect the brain from aging.
- May reduce bad breath.
- May help prevent type 2 diabetes.
- May help prevent cardiovascular disease.
- Improved brain function.
- Fat loss.
- Protecting against cancer.
- Lowering the risk of heart disease.

## CHEMICAL COMPOSITION :

The chemical composition of green tea is complex: proteins (15-20% dry weight), whose enzymes constitute an important fraction; amino acids (1-4% dry weight) such as theanine or 5-N-ethylglutamine, glutamic acid, tryptophan, glycine, serine, aspartic acid, tyrosine, valine, leucine, threonine, arginine, and lysine

## CONCLUSION :

The health benefits of green tea (*Camellia sinensis*) catechins are becoming increasingly recognised. Amongst the proposed benefits are the maintenance of endothelial function and vascular homeostasis and an associated reduction in atherogenesis and CVD risk. The mounting evidence for the influential effect of green tea catechins on vascular function from epidemiological, human intervention and animal studies is subject to review together with exploration of the potential mechanistic pathways involved. Epigallocatechin-3-gallate, one of the most abundant and widely studied catechin found in green tea, will be prominent in the present review.

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