

## Green Tea in Oral Health - A Review

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## Abstract

Tea is one of the common drinks used all over the world. Green tea is a normally used beverage in Asian countries. Tea consists of factors that consist of flavonoids and catechins which might be extensively applied to various health-related problems. The catechins in green tea extract have four main derivatives: Epicatechin, epigallocatechin (EGC), epicatechingallate, and EGC gallate. These factors have a large style of health benefits in various degrees, some of which might be dose-primarily based totally and others now no longer. Several studies provide evidence that Green tea catechins have the following beneficial effects on the human body: fight cancer, lowers cholesterol, protects against coronary heart disease, prevents diabetes, maintains a healthful circulatory system, prevents food poisoning, deliver extra healthful skin, and act as a powerful detoxifier, that prevents caries, strengthens teeth, reduces plaque and bacteria, and prevents bad breath with inside the oral cavity. This article reviews the antitumorogenic, antithrombotic, antiviral, antidiabetic, antioxidant, anti-cariogenic activities, antifungal activity, effect on periodontal disease, anti-halitosis properties in the oral cavity.

**Keywords:** Catechins, green tea extract, anti-cariogenic, antitumorogenic, antifungal,

## Introduction

People around the world are using natural and herbal products for the treatment of diseases. They are associated with the initiation and improvement of caries. Tea is one of the common beverages used worldwide. Green tea is a usually used beverage in Asian countries.

People from India, China, Japan, and Thailand consume green tea. Tea includes components collectively with flavonoids and catechins which have massive use in several health-related problems. The antioxidant properties of green tea prevent oxidative damage to DNA. Qualities of green tea help in oral health manipulation and improvement. Health benefits of consuming green tea embody the prevention of cancer, antibacterial, antioxidative, and lowering cholesterol.<sup>4</sup> Green tea extract catechins have four most important derivatives. The products derived from medicinal plants are used for pharmaceuticals. The oral cavity consists of 750 species of commensal micro-organisms especially

Streptococcus mutans and Streptococcus sobrinus, Actinomyces, Arachina, Actinobacteria, Bacteroidetes, Proteobacteria, Spirochaetes. Epicatechin, epigallocatechin (EGC), epicatechingallate, and EGC gallate. These components have a massive form of health benefits in diverse degrees, some effects of which are probably dosage-primarily based totally, and some are not dosage-primarily based totally. Several studies provide evidence that green tea catechins have the following beneficiary effects<sup>2-4</sup> on the human body - fight cancer, lowers cholesterol, protect competition against coronary heart disease, prevent diabetes, maintain a healthy circulatory system, prevent food poisoning, give a healthier skin, and act as an effective detoxifier. It prevents caries, strengthens teeth, reduces plaque and bacteria, and prevents bad breath with inside the oral cavity.

This article reviews the antitumorogenic, antithrombotic, antiviral, antidiabetic, antioxidant sports activities and anti-cariogenic, antifungal

activity, effect on periodontal disease, and effects on halitosis in the oral cavity.

### **History**

The shrub *Camellia Sinensis* describes the word tea. It originated in China and features turn out to be well-known internationally due to its economic and restoration purpose. In China, green tea is used as a treatment for headaches and depression.

Now green tea is used as a health drink internationally. Green tea is obtained from the tea plant through manner of a method of macerating and heat drying. It is prepared from unfermented leaves and contains an immoderate interest of powerful antioxidants called polyphenols.

### **Composition of green tea:**

The chemical composition of green tea consists of

1) Proteins 2) Enzymes 3) Amino acids 4) Carbohydrates 5) Minerals and trace elements 6) Trace amounts – lipids, pigments, steroids;” vitamins and volatile compounds 7) Fresh tea leaves encompass alkaloids and catechins.<sup>5</sup>

### **Antioxidant**

Green tea is an antioxidant. As they protect the cells in competition against the damaging consequences of peroxy radicals, hydroxyl radicals, and peroxy nitrite. An imbalance between antioxidants and oxygen species leads to cell damage.

Polyphenols in green tea are labeled as six catechin compounds. Green tea lowers the risk of coronary artery illness through manner of the method of reducing the oxidation of low-density lipoprotein and outcomes in a low occurrence of cancer.

In the oral cavity, cigarette smoking motives damage to mobile DNA. Antioxidants deactivate and destroy reactive oxygen species causing such damage and preventing the damaging of cells.<sup>5</sup>

### **Anticariogenic activity**

Dental caries is a multifactorial state of affairs that is prevented through manner of the method of cleaning the teeth. Green tea extracts in dentifrices are used as

an abrasive with strong antibacterial action. Green tea moreover indicates effectiveness withinside the control of dental plaque. The components of green tea affect caries and inhibit the proliferation of *S. mutans* and *S. sobrinus*. The polyphenols discovered in green tea reduce the production of acid compounds. Catechins discovered in green tea prevent the attachment of pathogenic organisms over the surfaces of teeth. In children, it significantly reduces the pit and fissures.

### **Antithrombotic activity**

A study conducted by Yang et al<sup>4</sup>. investigated the effects of dietary green tea catechin on phospholipase A2 hobby and the antithrombotic reaction of platelets in streptozotocin-diabetic rats. They have a take a observe divided the rats into one everyday enterprise and three diabetic agencies based mostly on their catechin content.<sup>4</sup>

It grows to be positioned that the activity of platelet cyclooxygenase and platelet thromboxane A2 formation grow to be higher and also, the synthesis of aortic prostacyclin (PGI<sub>2</sub>) and the PGI<sub>2</sub>/TXA<sub>2</sub> ratio grow to be lower withinside the catechin-loose enterprise in contrast to the everyday enterprise. However, it grows to be ultimately restored with the useful resource of the use of catechin supplementation. The above effects suggest that the abnormalities of the abnormality can be improved with the useful resource of the use of dietary catechin.

### **Antifungal activity**

The antifungal activity of catechin grows to be pH-dependent based mostly on a have a take a observe executed with the useful resource of the use of Hirasawa and Takada<sup>4</sup>. Among catechins, pyrogallolcatechin showed a stronger antifungal hobby in competition to *Candida albicans* than catechol catechin. The mixed-use of EGCG with amphotericin B and fluconazole in appropriate concentrations inhibited amphotericin B and fluconazole-resistant *C. albican*

### **Antiviral effect**

Various components of catechins from green tea were evaluated for their potential to inhibit influenza virus replication in a have a take a observe executed.

They have a take a observe indicate that the antiviral effect of catechins on the influenza virus is mediated now not best with the useful resource of the use of unique interaction but with the useful resource of the use of converting the physical properties of the viral membrane.

### **Effect on periodontal illness**

Anaerobic black-pigmented bacteria consisting of Prevotella spp. and Porphyromonasgingivalis are constantly associated with periodontal illness. The usefulness of green tea catechinwithinside the improvement of periodontal illness has grown to be studied. Green tea catechin showed a bactericidal effect in competition to Porphyromonasgingivalis and Prevotella spp. in vitro, and withinside the in vivo have a take a observe, the pocket depth and the percentage of Gram-terrible anaerobic rods (BPR) were marked to lower.<sup>6</sup>

### **Effect on halitosis**

Methyl mercaptan is considered the precept delivery of halitosis. An in vitro have a take a observe grow to be executed on the effect of tea catechins on halitosis. The effects of this have a take a observe indicated that tea catechins showed a superb effect on the elimination of methyl mercaptan, and chewing gum containing tea catechins grown to be useful to depress the horrible breath<sup>4</sup>.

### **Green tea effects – on overall oral health**

Green tea extract mouthwash has been used for the protection of erosion and abrasion of dentin of theteeth. It reduces the virulent action of cariogenic pathogens like Streptococcus mutans andlactobacilli. Green tea extract reduces amylase Activity in human saliva and inhibits the motion of enzyme lactate dehydrogenize and reduces acid production. Green tea powder reduces the unstable sulfur compounds and stops halitosis<sup>5</sup>

### **Conclusion**

This article reviews the antitumorigenic, antithrombotic, antiviral antioxidant and anticarcinogenic, antifungal activities, impact on periodontal disease, and halitosis withinside the oral cavity. Green tea catechins being a mighty antioxidant agent are used each in scientific and dental disorders. More medical trials are required to show its efficacy as an anticancer agent. Green tea performs a function in keeping oral health. Green tea reduces the prevalence of dental caries thru exclusive mechanisms which include enzyme activity and bacterial growth.

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