

Green Tea in Oral Health - A Review

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<http://dx.doi.org/10.13005/bpj/1016>

(Received: July 10, 2016; accepted: August 05, 2016)

ABSTRACT

Foods are considered for their nutritive value. They show positive effects in protecting and preventing chronic diseases. Green tea and its health benefits play a role in oral cavity. High molecular weight polyphenols are isolated from green tea possess antioxidant, antibacterial cariostatic, antitumor activities. In vitro studies shows green tea inhibits the growth and cellular adherence of cariogenic pathogens. Green tea intake helps in prevention and treatment of specific oral pathologies.

Key words: Green tea, oral health, cariostatic, antitumor.

INTRODUCTION

People around the world are using natural and herbal products for treatment of diseases. The products derived from medicinal plants are used for pharmaceuticals^{1,2,3}. Oral cavity consist 750 species of commensal micro-organisms mainly *Streptococcus mutans* and *Streptococcus sobrinus*. They are associated with initiation and progression of caries. People from India, China, Japan, and Thailand consume green tea. Health benefits of consuming green tea include the prevention of cancer, antibacterial, antioxidative, and lowering cholesterol. Antioxidant properties of green tea prevents oxidative damage of DNA^{4,5}. Qualities of green tea help in the oral health management and improvement⁶.

History

The shrub *camellia sinensis* describes the word tea. It is originated in china and became worldwide due to its economic and therapeutic purpose. In china green tea is used as a cure for headache and depression. Now green tea is used as a health drink worldwide⁷. Green tea is obtained from the tea plant by macerating and heat drying. It

is prepared from unfermented leaves and they contain high concentration of powerful antioxidants called polyphenols⁶.

Comosition 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 contain alkaloids and catechins

Anticariogenic activity

Dental caries is a multifactorial condition which is prevented by cleaning the teeth. Green tea extracts in dentifrices are used as an abrasive with strong antibacterial action^{8,9}. Green tea also shows effectiveness in control of dental plaque. The components of green tea have an influence on caries and inhibit the proliferation of *S. mutans* and *S. Sobrinus*. The polyphenols present in green tea

reduces the production of acid compounds. Catechins present in green tea prevent the attachment of pathogenic organisms over the surfaces of teeth. In children it significantly reduces the pit and fissures¹⁰.

Antioxidant

Green tea is an antioxidant. They protect the cells against the damaging effects of peroxy radicals, hydroxyl radicals, and peroxy nitrite. Imbalance between antioxidants and oxygen species leads to cellular damage. Polyphenols in green tea is classified as six catechin compounds. Green tea lowers the risk of coronary artery disease by reducing the oxidation of low density lipoprotein and results in low incidence of cancer. In oral cavity, cigarette smoking causes damage of cell DNA. Antioxidants deactivate and destroy ROS causing such damage and prevent the damaging of cells.

Green tea effects – on oral health

Green tea extract mouthwash is used in protection of erosion and abrasion of dentin of the teeth. Also reduces the virulent action of cariogenic pathogens like *Streptococcus mutans* and lactobacilli. Green tea extract reduces α amylase activity in human saliva and inhibits the action of enzyme lactate dehydrogenase and reduces the acid production. Green tea powder reduces the volatile sulphur compounds and prevents halitosis.

CONCLUSION

Green tea plays a role in maintaining oral health. Green tea reduces the incidence of dental caries through different mechanisms including enzymes activity and bacterial growth. Researchers need to define the mechanisms of action of green tea over the oral micro organisms for their prevention and treatment.

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