Impact of Green Tea on Human Health

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Abstract

Green tea is the most consumed beverage in the world because of its health benefits and soothing effect on human body. It contains polyphenolic compounds which include flavanols, flavandiols and phenolic acids. Green tea is best studied for decades because of its health benefits. It is increasingly recognized that it helps to reduce the risk of developing chronic diseases such as cancer, diabetes and obesity, depression, hypertension and increase bone mineral density, protects against solar UV radiation *etc*.

Introduction

Tea is one of the most widely consumed beverages in the world. Since Chinese and Japanese times, green tea has been considered as a potential medicine for prolonging life and maintenance of human health. Green tea is a non-fermented tea which is beneficial for our health because of its antioxidant content. The major polyphenols found in green tea are flavonoids. The four major flavonoids in green tea are the catechins, epicatechin (EC), epigallocatechin (EGC), epicatechin gallate (ECG) and epigallocatechin gallate (EGCG). Green tea is approximately 20-45 percent polyphenols by weight, of which 60-80 percent are catechins such as EGCG. Catechins are antioxidants that help to prevent cell damage. It also helps in preventing different types of cancer, cardio vascular disease, liver disease *etc*. Green tea helps in weight loss, depression, hypertension, combating type 2 diabetes. It strengthens the immune system because it protects against oxidants and radicals.

Processing of Green Tea

Steamed or Pan Fried

This step is the crucial technique for quality. Shaqing has four important goals: to get the proper colour, smell and taste of green tea by completely destroying the activity of enzymes in fresh leaves, stop the enzymatic oxidation of polyphenols and to give off grassy smell in order to release the aroma.

Rolling (Rounian)

The purpose of Rounian is to make the shape tight in order to make the next step drying easierand destructing of leaf tissue to make the quality better for easy brewing out the tea.

Health Benefits

1. Cancer Prevention

The polyphenols in green tea helps to decrease the tumour growth in the body and kill cancer cells and stop them from going. The consumption of green tea helps in

reducing the risk of gastric, lung, colon, pancreatic, ovarian and breast cancer. The expression of matrix metalloproteinase-2 (MMP-2) and MMP-9 of oral cancer derived cells (OC2 cells) are reduced by EGCG doses (Yang and Wang, 2010).

Table 1: Active Ingredients of Green Tea

Active Ingredients	Functions
Epigallo Catechin-3-gallate (EGCG)	Helps in bone regeneration, strong nervous system
Catechin (65%)	• Destroys bacteria's found in teeth • Helps in iron absorption
Polyphenol	• Helps as anti-ageing component • Prevents Type 2 Diabetes
Vitamin C & Vitamin E	Anti-Oxidants remove free radicals and prevents Cancer and heart stroke.
B Vitamins	• Metabolize carbohydrates • Manufacture fatty acids and amino acids
Flouride	Protection of tooth decay and gum disease
L-Theanine	Inhibits the neurotransmitter GABA & acts as antidepressant

2. Heart Benefit

It prevents heart diseases and stroke. The consumption of green tea three or more times a week improves the heart condition due to its antioxidant content. It helps to decrease bad or LDL cholesterol which further helps in reducing the risk of heart diseases.

3. Kidney Stones

Green tea extracts the bonds of calcium oxalate and prevents forming of large kidney stones so that the smaller crystals and stones can be easily passed through the urine, preventing renal failure.

4. Type 2 Diabetes

It helps to lower the risk of developing Type 2 Diabetes for green tea drinkers than for those who consumed no tea. It doesn't contain sugar and also calorie-free. Green tea can manage the blood glucose level, helps for insulin resistance and different types of diabetic disorders like hyperglycaemia, neuropathy *etc*.

5. Weight Loss

Green tea helps to reduce weight loss in overweight and obese adults. The antioxidant catechin helps to boost the metabolism rate and increase fat burning which helps to reduce the extra fat and helps in better weight management.

6. Inflammatory Skin Disease

It helps the skin disorder like psoriasis and dandruff. Green tea showed slower growth of skin cells and the gene that regulates the cells life cycles so that it prevent the skin from dry, red and inflammation and over production of skin cells.

7. Alzheimer's Disease

It is a neurodegenerative disorder which declines the memory and green tea (beta-amyloid) plays a major role to prevent this kind of disorder and helps to manage the nerve cells.

8. Liver Disorder

Green tea helps to reduce fatty liver disease by 75%. It boosts our immune system and helps for detoxification and protects the liver from damaging effects of toxic substances such as alcohol.

9. Improve Brain Function

The active ingredient present in green tea is caffeine which is a very good stimulant. It boosts the brain function and helps us to remain alert all the time and improve various aspects of brain function like mood, reaction time and memory. The amino acid L-theanine works synergistically with caffeine for healthy brain function.

10. Reduce Bad Breath

Streptococcus mutans is a common bacteria which is present in mouth and causes plaque formation and tooth decay. The catechins in green tea inhibit the growth of bacteria in the mouth and reducing the risk of bad breath. Catechins are supressing the growth of bacteria and lowering the risk of infection.

Conclusion

Green tea one of the healthiest drinks in the world. The natural chemical called polyphenolshelps in anti-inflammatory and anti-carcinogenic effects. Green tea can potentially have positive effects on weight loss, liver disorders, type 2 diabetes and Alzheimer's disease (Iso *et al.*, 2007). Catechins are antioxidants which help to prevent cell damage. The brewed beverage contains micronutrients called catechins, which help in colds and flues while protecting our cardiovascular health. The catechins in tea have antibacterial action against *Streptococcus mutans* and *Streptococcus sobrinus*. Long term consumption of tea catechins could be beneficial against high-fat diet induced obesity and reduce the risk of coronary disease and oxidative stress. Catechins have an inhibitory effect on *Helicobacter pylori* infection. Green tea consumption associated with increase the bone mineral density to protect the risk for hip fractures.

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