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Benefits of camellia sinensis

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Abstract
Tea is one of the most widely consumed beverages worldwide, and is available in various forms. 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. The composition of the tea varies depending on the fermentation process employed to produce it. The phytochemicals present in green tea are known to stimulate the central nervous system and maintain overall health in humans. Skin aging is a complex process mediated by intrinsic factors such as senescence, along with extrinsic damage induced by external factors such as chronic exposure to ultraviolet (UV) irradiation—A process known as photoaging—Which can lead to erythema, edema, sunburn, hyperplasia, premature aging, and the development of non-melanoma and melanoma skin cancers. UV can cause skin damage either directly, through absorption of energy by biomolecules, or indirectly, by increased production of reactive oxygen species (ROS) and reactive nitrogen species (RNS). Green tea phytochemicals are a potent source of exogenous antioxidant candidates that could nullify excess endogenous ROS and RNS inside the body, and thereby diminish the impact of photoaging. Several in vivo and in vitro studies suggest that green tea supplementation increases the collagen and elastin fiber content, and suppresses collagen degrading enzyme MMP-3 production in the skin, conferring an anti-wrinkle effect. The precise mechanism behind the anti-photoaging effect of green tea has not been explored yet. Studies using the worm model have suggested that green tea mediated lifespan extension depends on the DAF-16 pathway. Apart from this, green tea has been reported to have stress resistance and neuroprotective properties. Its ROS scavenging activity makes it a potent stress mediator, as it can also regulate the stress induced by metal ions. It is known that tea polyphenols can induce the expression of different antioxidant enzymes and hinder the DNA oxidative damage. Growing evidence suggests that green tea can also be used as a potential agent to mediate neurodegenerative diseases, including Alzheimer's disease. EGCG, an abundant catechin in tea, was found to suppress the neurotoxicity induced by Aβ as it activates glycogen synthase kinase-3β (GSK-3β), along with inhibiting c-Abl/FE65—the cytoplasmic non-receptor tyrosine kinase which is involved in the development of the nervous system and in nuclear translocation. Additionally, green tea polyphenols induce autophagy, thereby revitalizing the overall health of the organism consuming it. Green tea was able to activate autophagy in HL-60 xenographs by increasing the activity of PI3 kinase and BECLIN-1. This manuscript describes the reported anti-photoaging, stress resistance, and neuroprotective and autophagy properties of one of the most widely known functional foods-green tea.

Keywords: introduction, green tea health benefits, types of green tea, green tea side effects and risks, conclusion

Introduction

Green tea, native to China, has been consumed and hailed for its health benefits for centuries globally, but has only recently gained popularity in the United States. Tea is the most consumed beverage in the world behind water. However, 78 percent of the tea consumed worldwide is black and only about 20 percent is green.

All types of tea, except herbal tea, are brewed from the dried leaves of the Camellia sinensis bush. The level of oxidation of the leaves determines the type of tea.

Green tea is made from unoxidized leaves and is one of the less processed types of tea. It therefore contains the most antioxidants and beneficial polyphenols.

Fast facts on green tea here are some key points about green tea. More detail and supporting information is in the main article.

Green tea has been used in traditional Indian and Chinese medicine there are many different types of green tea available green tea may help prevent a range of ailments including cancer more research is needed to prove many of the health claims surrounding green tea

Green tea health benefits

Listed below are the possible health benefits associated with green tea. Green tea was used in traditional Chinese and Indian medicine to control bleeding and heal wounds, aid digestion, improve heart and mental health, and regulate body temperature. Recent studies have shown green tea can potentially have positive effects on everything from weight loss to liver disorders, type 2 diabetes, and Alzheimer's disease.

It is important to note that more evidence is required before these possible health benefit links are proved definitive:

1. Green tea and cancer prevention

According to the National Cancer Institute, the polyphenols in tea have been shown to decrease tumour growth in laboratory and animal studies and may protect against damage caused by ultraviolet UVB radiation.

In countries where green tea consumption is high, cancer rates tend to be lower, but it is impossible to know for sure whether it

is the green tea that prevents cancer in these particular populations or other lifestyle factors.

Some studies have also shown the positive impacts of green tea on the following types of cancer:

- breast
- bladder
- ovarian
- colorectal (bowel)
- esophageal (throat)
- lung
- prostate
- skin
- stomach

Researchers believe that it is the high level of polyphenols in tea that helps kill cancerous cells and stop them from growing. However, the exact mechanisms by which tea interacts with cancerous cells is unknown.

However, other studies have not found that tea can reduce cancer risk. The amount of tea required for cancer-preventive effects also varies widely in studies - from 2-10 cups per day.

In 2005, the Food and Drug Administration (FDA) stated, "there is no credible evidence to support qualified health claims for green tea consumption and a reduced risk of gastric, lung, colon/rectal, esophageal, pancreatic, ovarian, and combined cancers."

2. Green tea heart benefits

A 2006 study published in the *Journal of the American Medical Association* concluded that green tea consumption is associated with reduced mortality due to all causes, including cardiovascular disease.

The study followed over 40,000 Japanese participants between the ages of 40 and 79 for 11 years, starting in 1994.

The participants who drank at least 5 cups of green tea per day had a significantly lower risk of dying (especially from cardiovascular disease) than those who drank less than one cup of tea per day.

3. Green tea and lower cholesterol

An analysis of published studies in 2011 found that consuming green tea, either as a beverage or in capsule form, was linked to significant but modest reductions in total and LDL or "bad" cholesterol.

4. Stroke risk and green tea

Drinking green tea or coffee on a regular basis is associated with a reduced risk of stroke, according to a study published in the journal *Stroke: Journal of the American Heart Association*.

The lead author of the study, Dr. Yoshihiro Kokubo, Ph.D., said, "This is the first large-scale study to examine the combined effects of both green tea and coffee on stroke risks. You may make a small but positive lifestyle change to help lower the risk of stroke by adding daily green tea to your diet."

5. Green tea for type 2 diabetes

Studies concerning the relationship between green tea and diabetes have been inconsistent. Some have shown a lower risk of developing type 2 diabetes for green tea drinkers than for those who consumed no tea, while other studies have found no association between tea consumption and diabetes at all.

6. Green tea and weight loss

Green tea may promote a small, non-significant weight loss in overweight and obese adults; however, since weight loss in the studies was so minimal, it is unlikely that green tea is clinically important for weight loss.

7. Green tea and inflammatory skin diseases

A 2007 study concluded that green tea could hold promise as a new treatment for skin disorders such as psoriasis and dandruff. Researchers studied an animal model for inflammatory skin diseases, often characterized by patches of dry, red, flaky skin caused by the inflammation and overproduction of skin cells. Those treated with green tea showed slower growth of skin cells and the presence of a gene that regulates the cells' life cycles.

8. Working memory and the effects of green tea

Research published in the journal *Psychopharmacology* suggests that green tea can enhance our brain's cognitive functions, particularly the working memory.

The research team said their findings suggest that green tea could be promising in the treatment of cognitive impairments associated with neuropsychiatric disorders, such as dementia.

9. Green tea and Alzheimer's

In a study published in 2011, researchers tested the effect of a component of green tea, CAGTE (or "colon available" green tea extract), after it had been digested, to see how it affected a key protein in Alzheimer's disease.

The Alzheimer's Society commented that "this study adds to previous research that suggests green tea might help to reduce the risk of Alzheimer's disease. However, the researchers used a far higher dose of the active green tea chemical than would ever be found in the human body. More research is needed to see whether green tea is protective at a much lower dose, and to understand the mechanism involved."

Other studies have found that green tea might be helpful in preventing dental cavities, stress, chronic fatigue, treating skin conditions, and improving arthritis by reducing inflammation.

Nutritional breakdown of green tea

Unsweetened brewed green tea is a zero calorie beverage. The caffeine contained in a cup of tea can vary according to the length of infusing time and the amount of tea infused. In general, green tea contains a relatively small amount of caffeine (approximately 20-45 milligrams per 8 ounce cup), compared with black tea, which contains about 50 milligrams and coffee with 95 milligrams per cup.

Green tea is considered one of the world's healthiest drinks and contains one of the highest amounts of antioxidants of any tea. Natural chemicals called polyphenols in tea are what are thought to provide its anti-inflammatory and anti-carcinogenic effects. Green tea is approximately 20-45 percent polyphenols by weight, of which 60-80 percent are catechins such as EGCG. Catechins are antioxidants that are said to help prevent cell damage.

Types of green tea

Green tea is available bottled and sweetened with sugar or an artificial sweetener, in single tea bags, loose-leaf, and in instant-powder.

Green tea is available in many types, including:

- bottled and sweetened with sugar or an artificial sweetener
- in single tea bags
- as loose-leaf
- in instant-powder
- green tea supplements, which are sold in capsule form or liquid extracts

According to 2010 research presented at the American Chemical Society, bottled teas are not equivalent to brewed teas as some 16 ounce bottled teas can contain fewer polyphenols than one cup of brewed tea.

Green tea side effects and risks

There are little to no known side effects or contraindications to drinking green tea for adults. However, the following risks or complications should be made clear:

- **Caffeine sensitivity** - those with severe caffeine sensitivities could experience insomnia, anxiety, irritability, nausea, or upset stomach.
- **Blood thinners** - those taking blood thinners (anticoagulant drugs) such as Coumadin/warfarin should drink green tea with caution due to its vitamin K content. It's also recommended to avoid green tea and aspirin, because they both reduce the clotting effectiveness of platelets.
- **Other stimulants** - if taken with stimulant drugs, green tea could increase blood pressure and heart rate.

Green tea supplements contain high levels of active substances that can trigger side effects and interact with other herbs, supplements, or medications.

Green tea supplements are unregulated by the FDA and may also contain other substances unsafe for health or with unproven health benefits. Always check with a doctor before starting any herb or supplement regimen.

In particular, pregnant or breastfeeding women, those with heart problems or high blood pressure, kidney or liver problems, stomach ulcers, or anxiety disorders should not take green tea supplements or extracts.

Further reading on green tea

Various green tea products are available to purchase online. It is a good idea to compare different brands, and different types of green tea, to choose the most suitable one for you.

Have you enjoyed reading about the potential health benefits of green tea? Take a look at our collection of articles about other fruits and vegetables. Alternatively, read our article about the top 10 healthy foods for your daily diet.

We picked linked items based on the quality of products, and list the pros and cons of each to help you determine which will work best for you. We partner with some of the companies that sell these products, which means Healthline UK and our partners may receive a portion of revenues if you make a purchase using a link(s) above.

- Nutrition / Diet
- Cancer / Oncology
- Heart Disease

Sourcescollapsed

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