



## Green Tea: An Exploration of Health, Wellness and Wisdom

From ancient times until the present, green tea has served as a cultural tradition, a refreshing beverage, a healing tonic, and a remedy for a worried mind. This plant-derived wonder has been used in medicine for more than 4,000 years<sup>1</sup> and is recognized for its ability to potentially prevent common health ailments and promote wellness. Throughout the ages, green tea has been used not only as a curative beverage, but as a topical ointment and concentration aid, and today appears in numerous food, beverage, and health and beauty products. Knowledge of the potential benefits of green tea continues to increase around the world, and the ancient remedy continues to maintain a significant presence in today's mainstream environment.

### History



*Green tea leaves*

According to various sources, green tea originated in China more than 4,700 years ago. As legend has it, green tea was discovered accidentally by Chinese Emperor Sh'eng Nung when leaves from a nearby tea bush fell into his boiling water. When the emperor drank the beverage, he was inspired by the taste and the way he felt afterward, and decided that from then on green tea would be his drink of choice and that of his people. There are various interpretations of this legend, however, after its discovery, green tea grew in popularity throughout China and was carried to Japan and the surrounding areas by scholars and Buddhist monks.<sup>2</sup>

A Buddhist tale of the origination of tea follows the journey of Siddhartha Gautama, a Nepalese prince and historic founder of Buddhism, from India to China. Siddhartha, eager to prove his faith, pledged to complete the journey without sleeping. Eventually, his exhaustion overtook him and he fell into a deep sleep. When he awoke, he cursed his eyelids and promptly removed them, throwing them to the ground. According to the tale, the eyelids were covered in soil and grew into a tea bush. It is said that Siddhartha chewed on leaves of the bush and immediately his tired body was revived with energy. From then on, tea became a popular beverage everywhere Siddhartha and his followers went – through China, Japan and the surrounding areas.<sup>3</sup>

These tales prove that the origination of green tea dates back to ancient times, far before written record. Since its discovery, green tea has been associated with strength and refreshment, and is revered in everyday drinking and tea drinking ceremonies. Over the years, throughout many cultures, green tea consumption has become a daily ritual and has been embraced by the spiritually enlightened during meditation and spiritual practice. Green tea has also been used as an alternative to alcohol, as an external application, and a traditional beverage over which people come together.

---

<sup>1</sup> Rosen, Diana. *The Book of Green Tea*. Pownal, VT: Storey, 1998.

<sup>2</sup> Zittlau, Jörg. *Green Tea for Health and Vitality*. New York: Sterling Pub., 1999.

<sup>3</sup> Rosen, Diana. *The Book of Green Tea*.

## Process

Green tea is derived from the *Camellia sinensis* plant, a genus of flowering plants in the *Theaceae* family native to China, South and Southeast Asia. Today, the plant is cultivated across the world in tropical and subtropical areas of Asia, Africa and South America, and is commonly known as the tea plant, tea tree and tea shrub. All varieties of tea, including black, white, green, oolong and pu-erh, are made using leaves from the *Camellia sinensis* plant but are processed differently to attain varying levels of oxidation, resulting in unique flavor profiles and health benefits. Green tea can also be processed from the Assam plant, or *Camellia sinensis* var. *assamica*, a relative of the Chinese *Camellia sinensis* var. *sinensis* plant native to the Assam region in India.<sup>4</sup>



*Cultivation of the Camellia sinensis plant*

The difference between green tea and other teas is that the leaves are only partially fermented or not fermented at all, allowing the finished tea to remain closer to the plant's natural state. The ways in which fermentation of the leaves is stopped or prevented vary by culture and region, however, because fermentation is stopped early on in the tea processing, a significant amount of health benefits and healing properties are preserved within the leaves.



*Pan frying dried tea leaves*

In China, tea leaves are dried after harvest to stop fermentation. The dried leaves are then often pan-fired in very large woks, over a flame or using an electric wok. Withering is a method that is also used, which spreads the tea leaves on racks of bamboo or woven straw to dry in the sun or uses warm air. Both firing and withering disrupts the activity of the oxidizing enzyme and develops a roasted taste.

Japanese green tea is traditionally not dried at all – the leaves are steamed after they are picked. Like drying and pan-firing, steaming stops the activity of the fermenting enzyme. The steaming time determines the type of green tea and flavor that is produced, and occurs in a bamboo tray over water or by a revolving or conveyor-belt machine. After steaming, the leaves are cooled and ready to brew.<sup>5</sup>

Green tea made in the Indian subcontinent is processed similarly to Chinese green tea, and fermentation is halted first through drying, then with pan-frying. Due to the difference in geography and climate conditions (and other factors), Green tea made from *Camellia sinensis assamica* has a flavor profile all its own.

Due to the wide range of factors that contribute to the final green tea product, including the region where the tea leaves are harvested, differing growing climates, varying cultivation methods and other factors, there are more than 500 types of green tea available, all differing by culture, taste, caffeine levels and brewing method.<sup>6</sup>



*Green tea, after drying and pan-frying*

<sup>4</sup> "How Green Tea is Made – Making, Used, Processing, Parts, Steps, Product, Industry, Machine, Raw Materials, The Manufacturing Process of Green Tea, Quality Control." *How Products are Made*. Web. 10 Dec. 2011. [www.madehow.com/Volume-5/Green-Tea.html](http://www.madehow.com/Volume-5/Green-Tea.html).

<sup>5</sup> Zittlau, Jörg. *Green Tea for Health and Vitality*.

<sup>6</sup> "Green Tea –USDA Certified Organic." *Natural Health Products by Dr. Joseph Mercola*. Web. 11 Dec. 2011. [products.mercola.com/green-tea/](http://products.mercola.com/green-tea/).

## Health



*There are many suggested health benefits associated with green tea*

Today, scientific research across the world continues to suggest vast health benefits long associated with drinking green tea. From studies examining cancer prevention to skin health, green tea has long been associated with preventing or ameliorating a variety of physical conditions. In addition, paired with a balanced diet and exercise, daily green tea drinking is believed to contribute to a longer life span.<sup>7</sup>

The suggested health benefits provided by green tea are associated with the extensive amount of naturally occurring plant compounds contained within the tea leaves. In addition to essential vitamins, green tea is rich in antioxidant polyphenols, particularly epigallocatechin gallate (EGCG). EGCG is a powerful antioxidant linked to inhibiting growth of cancer cells, lowering bad cholesterol and preventing the formation of blood clots. Polyphenols, including EGCG, make up about 30% of the dry leaf weight of green tea, and researchers believe that EGCG is one of the most beneficial types of all the natural phytochemicals.<sup>8</sup>

Polyphenol antioxidants are naturally present in many plants, fruits and vegetables. Often referred to as a “life span essential,” polyphenol antioxidants are believed to prevent cells from breaking down, or “oxidizing.” While a vital source of life, oxygen has been shown to cause cells to eventually become damaged when they metabolize, or release energy, however, polyphenol antioxidants assist the body in removing excess oxygen to promote healthy cell growth and aging. In addition, these types of antioxidants have the ability to rid the body of free radicals – organic molecules responsible for aging – believed to increase a person’s risk of developing cancer and other diseases.<sup>9</sup>

Due to its high polyphenol levels and other active compounds, green tea may support systems and functions within the body, including immunity, bodily functions and disease prevention. Additionally, some findings have suggested green tea plays a role in anti-aging.

## Immunity

A study published in 2003 in the journal *Proceedings of the National Academy of Sciences* suggests how substances found in tea may help prime the body’s immune system to fight off infection. The study demonstrates how chemicals – known as alkylamines – which are commonly present in tea (as well as wine, apples, mushrooms and other sources) are also present in some bacteria, cancerous cells, parasites, fungi and other disease-causing agents. The study suggests that drinking tea may prime the body’s immune system against these agents by teaching disease-fighter immune cells to recognize and remember alkylamines, strengthening the body from disease.<sup>10</sup>



*Substances in Green Tea may strengthen the immune system*

Researchers at the Linus Pauling Institute found that EGCG found in the tea potentially boosts the human immune system by promoting the growth of regulatory T cells. T cells are a type of white blood cell, also called lymphocytes, making up part of the immune system. T cells help the body fight diseases or harmful substances, and regulate the

---

<sup>7</sup> “Green Tea Health Benefits.” *Chinese Recipes – Chinese Cuisine - Chinese Food and Cooking*. Web. 10 Dec. 2011. [chinesefood.about.com/library/weekly/aa011400a.htm](http://chinesefood.about.com/library/weekly/aa011400a.htm).

<sup>8</sup> “Green Tea.” *About Holistic Healing – Body Mind Spirit – Chakras – Energy Medicine*. Web. 10 Dec. 2011. [healing.about.com/cs/herbaltherapy/a/greentea.htm](http://healing.about.com/cs/herbaltherapy/a/greentea.htm).

<sup>9</sup> “Green Tea.” *University of Maryland Medical Center/Home*. Web. 10 Dec. 2011. [www.umm.edu/altmed/articles/green-tea-000255.htm](http://www.umm.edu/altmed/articles/green-tea-000255.htm).

<sup>10</sup> “Tea Boosts Immunity and Helps Skin, Study Finds.” *Daily Nature and Science News and Headlines/National Geographic News*. Web. 10 Dec. 2011. [news.nationalgeographic.com/news/2003/04/0429\\_030429\\_teaimmunity.html](http://news.nationalgeographic.com/news/2003/04/0429_030429_teaimmunity.html).

body's immune system by turning off unneeded autoimmune reactions. Incorporating green tea into a daily regimen may offer immune health support.<sup>11</sup>

### Bodily Functions

In addition to immune support, some research suggests that green tea may be linked to improved bodily functions, including digestion, tooth and bone health, and defense against infections.



*Green Tea may be linked to improved bodily functions*

Digestion – Due to its tannic acid content (a type of polyphenolic compound) green tea may help protect the walls of the stomach and intestines against attacks from bacteria. Some studies suggest that green tea may help to reduce excessive gastric acids within the digestive system, offering a calming and soothing effect.<sup>12</sup>

Tooth and Bone Health – Green tea also contains a significant amount of fluoride, which may offer support for strong teeth and bones. Some articles suggest that the tannic acid in green tea may help to provide relief to those suffering from gum infections by supporting the repair of damaged blood vessels and helping to prevent the development of dental plaque. Green tea has also been associated with preventing bad breath by potentially reducing bacteria found in the mouth.

The high content of manganese in green tea may help to transport calcium to the bones and other areas within the body where it is needed, offering added support to bone development and growth.<sup>13</sup>

Defense Against Infections – The combination of flavonoids and vitamin C in green tea may offer an antibiotic effect, which the body can use to mobilize the immune system and tackle inflammation and infections. The anti-inflammatory properties found in green tea may protect against fungal infections and may potentially help to prevent the inflammation of the skin and other tissues, such as the ligaments of the joints. Green tea may also be beneficial in relieving other infections, including yeast infections and acne.<sup>14</sup>

Green tea may offer high antiviral properties as well. A number of scientific studies have suggested that the antioxidants contained in the leaves of the plant may help to protect cells from influenza viruses. Another trial has shown that the flavonoids and catechins may inhibit the herpes simplex virus.<sup>15</sup>

### Disease Prevention

Because of its immune-boosting properties and ability to improve bodily functions, studies suggest that green tea may play a significant role in the prevention of diseases such as cardiovascular disease, cancer, diabetes, and neurodegenerative diseases such as Alzheimer's and dementia.

Cardiovascular Disease – Drinking green tea may help lower the risk of developing heart disease by supporting the health of blood vessel cells surrounding the heart. Green tea may also protect arteries against atherosclerosis, a buildup of fatty, plaque material on the inner layer of blood vessels. According to the University of Maryland Medical Center, population-based clinical studies indicate that the antioxidant properties of green tea may help prevent

---

<sup>11</sup> "Green Light for Tea's Immunity System Boost|Health|The Earth Times." *Environmental Issues|Environment News| Green Blogs|Earth Times*. Web. 10 Dec. 2011. [www.earthtimes.org/health/green-light-tea-immunity-system-boost/969/](http://www.earthtimes.org/health/green-light-tea-immunity-system-boost/969/).

<sup>12</sup> Zittlau, Jörg. *Green Tea for Health and Vitality*. New York: Sterling Pub., 1999.

<sup>13</sup> Marshall, Jessica. "Green Tea May Strengthen Your Teeth:Discovery News." *Discovery News: Earth, Space, Tech, Animals, History, Adventure, Human, Autos*. Web. 12 Dec. 2011. [news.discovery.com/human/green-tea-teeth-dental.html](http://news.discovery.com/human/green-tea-teeth-dental.html).

<sup>14</sup> Zittlau, Jörg. *Green Tea for Health and Vitality*.

<sup>15</sup> Bias, Herbalist Scott. "GenInv – Health and Wellness » Green Tea Prevents Influenza | Alternative Medicine." *GenInv – Health and Wellness*. Web. 12 Dec. 2011. <<http://www.geninv.net/2011/04/green-tea-prevents-influenza-alternative-medicine/>>.

atherosclerosis, particularly coronary artery disease. Researchers estimate that the rate of heart attack decreases by 11 percent with consumption of three cups of green tea per day.<sup>16</sup>

In addition to reducing plaque buildup that can lead to heart attack, research presented by the University of Maryland Medical Center suggests that green tea might lower total cholesterol and raises HDL ("good") cholesterol in both animals and people. One population-based clinical study suggests that men who drink green tea are more likely to have lower total cholesterol than those who do not drink green tea. In another small study of male smokers, researchers determined that green tea may significantly reduce blood levels of harmful LDL cholesterol.<sup>17</sup>

Cancer – There have been numerous medical studies conducted on green tea and its effect on the growth of cancer cells. The focus of many of these studies includes the effect of EGCG in green tea and its interaction with free radicals, which some believe contribute to the growth of cancer cells. It has been suggested that there is a correlation between EGCG and the reduction of free radicals in the body, which some believe may protect cells from DNA damage caused by reactive oxygen. In addition, green tea may contribute to the reduction of cancer tumor cell growth and a potential reduction in the overall risk of cancer cell development.<sup>17</sup>

Diabetes – Diabetes is a metabolic disorder that affects the way the body processes glucose, or sugar produced from food. There are two main types of diabetes, both dealing with improper functioning of insulin within the blood and its ability to break down and absorb glucose. Multiple studies suggest that green tea may slow down the transformation of sugar in food to glucose so that it may be absorbed more easily. Additionally, the U.S. Department of Agriculture (USDA) has reported that EGCG may also help diabetics by mimicking the actions of insulin and inhibiting the liver's production of glucose, thus lowering blood sugar. Additional studies suggest that green tea catechins may reduce the amount of glucose that passes through the intestine into the bloodstream, therefore preventing blood sugar spikes in diabetics.<sup>18</sup>



*Some studies suggest Green Tea may help prevent disease*

Neurodegenerative Diseases – Various studies have suggested a correlation between green tea and protection against Alzheimer's disease and dementia. Research conducted at Newcastle University in the U.K. suggests that polyphenols present in green tea may have neuroprotective properties, binding with the toxic compounds that contribute to Alzheimer's and protect brain cells.<sup>19</sup>

Polyphenols in green tea contribute to the improvement of memory and prevention of dementia and Parkinson's disease. EGCG may offer a defensive effect on the brain and may potentially fight free radicals that deteriorate brain function leading to neurodegenerative diseases and decrease memory.<sup>20</sup>

---

<sup>16</sup> "Green Tea." *University of Maryland Medical Center|Home*. Web. 10 Dec. 2011. [www.umm.edu/altmed/articles/green-tea-000255.htm](http://www.umm.edu/altmed/articles/green-tea-000255.htm).

<sup>17</sup> "Tea and Cancer Prevention - National Cancer Institute." *Comprehensive Cancer Information - National Cancer Institute*. Web. 10 Dec. 2011. [www.cancer.gov/cancertopics/factsheet/prevention/tea](http://www.cancer.gov/cancertopics/factsheet/prevention/tea).

<sup>18</sup> "Green Tea and Diabetes." *How to Beat Diabetes Naturally Without Any Side Effects*. Web. 10 Dec. 2011. [www.all-about-beating-diabetes.com/green-tea-and-diabetes.html](http://www.all-about-beating-diabetes.com/green-tea-and-diabetes.html).

<sup>19</sup> "Green Tea May Help Prevent Alzheimer's Disease." *WebMD - Better Information. Better Health*. Web. 10 Dec. 2011. <<http://www.webmd.com/alzheimers/news/20110106/green-tea-may-help-prevent-alzheimers-disease>>.

<sup>20</sup> Zittlau, Jörg. *Green Tea for Health and Vitality*. New York: Sterling Pub., 1999. Print.

<sup>21</sup> "The Top Five Foods for Healthy Skin." *Natural Health News*. Web. 10 Dec. 2011. [www.naturalnews.com/020409.html](http://www.naturalnews.com/020409.html).

### Anti-Aging



*Green Tea has been associated with longevity and beauty*

Throughout the ages, green tea has not only been thought to improve health and well-being, but has been attributed to longevity and preservation of physical beauty. Similar to its effect on health, the polyphenolic compounds and EGCG found in green tea may help to slow aging and protect physical youth. From strong teeth to improved memory, increased metabolism to skin protection, green tea has been perceived as nature's "anti-aging superfood."<sup>21</sup>

The antioxidant polyphenols and other active compounds in green tea may have multiple effects on the aging process. In addition, the thermogenic properties of green tea may help to raise metabolic rates and speed up fat oxidation, suggesting that green tea might aid in weight loss.<sup>20</sup>

When it comes to youthful looking skin, green tea may reduce the damage of sunburns and overexposure to ultraviolet light, which in turn reduces the risk of skin cancer. Recent research by scientists at the Medical College of Georgia suggests that EGCG acts as a "fountain of youth" of sorts for skin by reactivating dying skin cells. In addition, the potential anti-inflammatory properties of green tea have been used to treat acne and problem skin.<sup>21</sup>

### **The Mind**

In addition to the potential physical health benefits associated with green tea, including those related to memory, concentration and the mind, there are various psychological benefits that are sometimes associated with drinking green tea.

When green tea was first discovered and adopted in Asian cultures, its consumption was often used by monks and spiritual leaders in meditation and spiritual tea ceremonies to "come to the present moment." Today, drinking green tea still provides an opportunity to slow down and appreciate the "here and now," and allows time to relax. The stimulating substances in green tea may contribute to increased concentration, and relaxing amino acids such as L-theanine can provide a calming effect, allowing the body to "tune out" stress. Because of the balance of subtle stimulation and relaxation properties, green tea continues to be used to calm the mind and enable a present state of being.<sup>22</sup>

### **Conclusion**

It can be argued that not many other plant-derived substances may provide the multitude of health and wellness benefits of green tea. It is truly one of nature's wonders, and due to its many potential positive effects on the body and mind, it continues to become a worldwide drink of choice. It not only provides a foundation for optimal health and a clear state of mind, drinking green tea has brought people together. It is a beverage that offers an opportunity for people to connect and truly experience what is most important in life – health and our well-being.

---

<sup>22</sup> Rosen, Diana. *The Book of Green Tea*.

## Additional Sources

“Green Tea Guards Against Bacterial Infection and Prevents Dementia.” *Vanguard News*. Web. 10 Dec. 2011. [www.vanguardngr.com/2011/05/green-tea-guards-against-bacterial-infection-and-prevents-dementia/](http://www.vanguardngr.com/2011/05/green-tea-guards-against-bacterial-infection-and-prevents-dementia/).

“Green Tea and Immune System.” *The Truth About Tea – A T-Volution is Quietly Steeping Away*. Web. 12 Dec. 2011. [www.amazing-green-tea.com/green-tea-and-immune-system.html](http://www.amazing-green-tea.com/green-tea-and-immune-system.html).

“Green Tea Lowers Risk of Heart Disease.” *WebMD – Better Information. Better Health*. Web. 10 Dec. 2011. [www.webmd.com/heart-disease/news/20080702/green-tea-lowers-risk-of-heart-disease](http://www.webmd.com/heart-disease/news/20080702/green-tea-lowers-risk-of-heart-disease).

“Green Tea and Memory.” *Health Psychology Home Page*. Web. 12 Dec. 2011. [healthpsych.psy.vanderbilt.edu/MemoryTea.htm](http://healthpsych.psy.vanderbilt.edu/MemoryTea.htm).

“Scientists Discover How Polyphenols in Green Tea May Protect Health of Diabetics.” *Natural Health News*. Web. 10 Dec. 2011. [www.naturalnews.com/029496\\_polyphenols\\_green\\_tea.html](http://www.naturalnews.com/029496_polyphenols_green_tea.html).

“Tea Flavonoids and Cardiovascular Health.” *Oxford Journals|Medicine|QJM: An International Journal of Medicine*. Web. 10 Dec. 2011. [qjmed.oxfordjournals.org/content/94/5/277.full](http://qjmed.oxfordjournals.org/content/94/5/277.full).

“What Is a Polyphenol Antioxidant?” *WiseGEEK: Clear Answers for Common Questions*. Web. 10 Dec. 2011. [www.wisegeek.com/what-is-a-polyphenol-antioxidant.htm](http://www.wisegeek.com/what-is-a-polyphenol-antioxidant.htm).

