



Matcha Green Tea: scientific name- *Camellia sinensis*



Tea has been used in traditional Chinese medicine for over 5000 years. Writings from the Tang Dynasty indicate that by 650 AD tea was cultivated throughout China. It was introduced to Japan in about 600 AD by Buddhist priests returning from study in China.

The legendary health benefits of tea have been evaluated by modern science. This information is so well known and so thoroughly documented that I will not go into great detail in this product brief. Evidence-based scientific studies are documented in the end notes.

Polyphenols function as powerful antioxidants. One of the most powerful antioxidants found in green tea is Epigallocatechin Gallate. EGCG may help against free radicals that contribute to cancer(1), heart disease and clogged arteries (2). They are also helpful to burn fat (3) and counteract oxidative stress in the brain that can lead to neurodegenerative diseases such as Alzheimer's and Parkinson's (4).

Weight Management: EGCG inhibits enzymes that break down the hormone norepinephrine. Increasing norepinephrine levels increase the signals that stimulate the body to breakdown fat – especially visceral fat that builds up around our organs in the abdominal area. In addition caffeine stimulates fat burning by increasing our metabolic rate. The overall effect is weight loss and energy gain. (8) (See also footnotes #3)

Physical and Cognitive Stimulation: Tea contains caffeine which blocks adenosine receptors and inhibits the effects of adenosine. The caffeine binds to and occupies the adenosine receptor sites. However, caffeine doesn't slow down the cell's activity as adenosine would. Instead of slowing down because of the adenosine, cellular metabolism speeds up.

With caffeine blocking the adenosine, you have increased neuron firing in the brain. The pituitary gland senses this activity and thinks an emergency must be occurring, so it releases hormones that tell the adrenal glands to produce adrenaline (epinephrine). Adrenaline is the "fight or flight" hormone and by this metabolic pathway caffeine stimulates your body and your mind. You may feel more alert and focused, more energetic and less fatigued.

However the high levels caffeine found in coffee may cause anxiety, irritability and reduced control of fine motor movements ("jittery effects) for some people. High caffeine levels may increase blood pressure, cause insomnia and have other negative health effects.

Green tea has lower levels of caffeine than coffee, enough for a boost but not so much as to cause the jittery effects we may see in coffee. In addition, green tea has high levels of a rare amino acid, L-theanine.

L' Theanine increases the activity of GABA, a neurotransmitter which produces anti-anxiety effects and also increases dopamine and alpha waves in the brain. (5) These calming effects result in a more stable energy (less “jittery”) than caffeine alone. The proper balance of L-theanine and caffeine promotes faster reaction time, faster numeric working memory and improved sentence verification accuracy. (6)

L'Theanine can cross the blood-brain barrier to have a direct influence on brain activity. It enhances alpha activity and was found to increase the general state of mental alertness and arousal. The combination of caffeine and L-Theanine increased speed and accuracy in attention switching tests and reduced the likelihood of distraction in memory tasks. Researchers in Korea conducted randomized double-blind, placebo controlled studies which showed that L-Theanine improved memory, selective attention and cognitive alertness (7).

Cognitive Health: Green tea not only increases immediate and short term brain function, but may also protect against neurodegenerative diseases in old age. Catechin compounds in tea may protect neurons potentially lowering the risk of Alzheimer's and Parkinson's. (see end note 4)

Asthma: Theophylline relaxes smooth muscles and so has made tea a traditional remedy for respiratory illness including asthma. (9)

Dental Health: Catechins in green tea can inhibit the growth of harmful *Streptococcus mutans* bacteria in the mouth that cause plaque formation leading to tooth decay. (10)

Diabetes: Green Tea may improve insulin sensitivity and reduction in blood sugar levels to help combat Type II diabetes. (11)

Anti-aging: A study of over 40,000 Japanese adults concluded that those who drank 5 cups or more per day of green tea were significantly able to live longer. A follow up study with 14,000 Japanese between the ages of 65-84 years found that those who drank the most green tea were 76% less likely to die during the six year period of the study and there were 31% fewer cardiovascular deaths in women who drank five or more cups of green tea daily compared with those who drank one cup or two.

THE THAI FREEZE DRY DIFFERENCE-MOUNTAIN GROWN



Most commercial tea is grown on large plantations on terraced land (“terrace tea”). This tea gets too much sun to qualify as “matcha.” Matcha green tea is grown with substantial shade as it grows naturally in the mountains where the surrounding trees and the shape of the mountains themselves provide nature's perfect balance of sunlight and shade along with the biodiversity of nature. Shielding the tea leaves from sunlight increases the accumulation of amino acids vitamins, L'Theanine and Caffeine.

Less sunlight requires more efficient use of the sunlight during the process of photosynthesis. This requires higher levels of chlorophyll which results in the bright green color of “matcha.” Sunlight converts L'Theanine to catechins. Less sunlight creates more L'Theanine. At the same time less sunlight increases the level of Caffeine. **It is this balance of L'Theanine and Caffeine that creates the alert calmness of a modern warrior typical of “matcha.”**



RAW MATERIAL SPECIFICATIONS: We start with the highest quality shaded mountain tea. The environment in which the tea is grown largely determines its quality. Encroachment of industrial toxins such as acid rain have tinted the ancient tea forests of China and other highly industrialized countries. In the mountains of Northern Thailand, far from any cities and in an agricultural-based economy lacking industrial activity the environment is still pristine.

Weather conditions, rainfall and time of harvest are critical. Thai Freeze Dry's procurement team works with our farmers to harvest under just the right conditions. We harvest only the young shoot (terminal bud) and young top two leaves. The leaves are carefully hand-picked to avoid broken leaves and partial flushes that can reduce quality. The young, fresh growth produces the best matcha since they have been exposed to far less sunlight than the mature leaves.

Farm Fresh: The mountains where our tea grows is about 1.5 hours drive from our factory. This is critical especially in the case of green tea. Tea is very energetic (bioactive) and as soon as it is removed from its life cycle (harvested) it heats up due to enzymatic activity and degrades rapidly. This heat is a reflection of the strength of the enzymes and the high level of energy in the tea leaves. Some botanicals can be frozen and delivered into the freeze dry process in frozen form since the first step after cleaning is freezing in any case. However tea leaves should not be frozen and must be delivered absolutely farm fresh into our Cellular Fraction-Line process. This makes the logistics of delivery and processing quite challenging but possible for us due to our location very near to the mountain tea.

CELLULAR FRACTION-LINE TECHNOLOGY (CFL): This evolutionary and transitional process preserves the health benefits of the fresh tea in a stable form (dry powder) that is highly bio-active as well as highly bioavailable. It is largely this process that explains the superior quality and efficacy of our matcha green tea. Tea is a complex living organism where higher levels of intelligence operate through patterns of association and encoded information in the structure and function of the components. Analysis of the individual components and chemistry per se is not an incorrect analytical system but must exist together with and compliment the more holistic approach where we come to understand how the plant's activity moves through the body with higher levels of interaction and organization. Order, information, programming and communication are essential ingredients of every biological system and CFL is the best method to keep this all intact (Link to CFL).

All teas come from the same plant – *Camellia sinensis*. Herbal teas are not truly “tea, but more accurately described as “herbal infusions.” The differences between matcha, black (oolong), white tea, green tea are primarily depends on how the tea leaves are grown and processed. In general, the less the tea is processed the stronger are the polyphenols and nature's benefits. Matcha green tea is made by drying and grinding fresh green tea leaves. CFL activated matcha green tea is produced without exposure to heat and with a minimal need for mechanical grinding. In CFL, the tea falls into small porous particles between the cell walls preserving the cellular structure and extracellular matrix. This unique process provides a highly bioactive and bioavailable tea powder which makes our matcha green tea the highest attainable quality.

CFL activated matcha green tea powder was analyzed by a food scientist consulting with a prestigious company in EU. Tea leaves had been harvested the same day, and from the same tea bushes ; one lot had been traditionally dried under shade ; the other lot had been dried by Cellular Fraction-Line technology CFL .

Results are dramatic: In the case of CFL activated green tea, compounds (polyphenols) had been multiplied, by 4 folds up to 20 folds.

Same harvest, same origin, green tea from north of Thailand	Process	Main molecules of green tea g/100g								
		Catechin	Epicatechin	Epicatechin-3-O gallate	Epigallocatechin	Epigallocatechin gallate (EGCG)	Total catechins	Gallic acid	Total des polyphenols	L-theanine
North of Chiang Mai	Accurate drying in the shade, then reduce to powder	0,28	0,046	0,14	traces	0,5	0,97	0,04	1,01	traces
	Active Freeze Drying	1,15	0,98	0,94	3,6	8,4	15,07	0,04	15,11	1,27
Result	Increase	400%	2100%	700%	x20	1700%	1600%	same	1500%	x20

Other lab tests show a high ORAC level and the complete absence of pesticides in our USDA Organically Certified green tea leaves Certificate Number: ONE-1667-151201-H-NOP. (links)

When you drink matcha green tea you are not getting just a mild infusion such as when you drink a cup of tea and then throw away the leaves or tea bag. A majority of the nutrients, antioxidants and vital ingredients stay in the tea leaves after steeping. In the case of “matcha” you are getting a concentrated dose by ingesting the entire tea leaf. Compare this to drinking a cup of tea (a mild infusion) - now eat the tea leaves/tea bag. The difference is astronomical in terms of delivery of the vital ingredients and the health benefits of the live tea plant.

End notes:

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