

Matcha: **Production and Usage**

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AUDIENCE AND PURPOSE

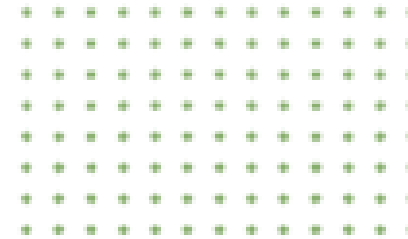
The audience for this technical document is people interested in learning about the process of matcha production, as well as its applications and usages in consumption. As matcha is becoming increasingly popular around the world, particularly in the United States, those who are curious about the product can use this document as a guide into the production process and usages.


The purpose of this document is to inform and describe the process of matcha production as well as give a brief history of its usages in traditional Japanese culture and western culture.


INTRODUCTION

Matcha, or 抹茶, as it's known in East Asia, is green tea powder that is finely ground in a granite mill. It was commonplace in traditional Japanese tea ceremonies in the 12th century, and has recently become more popular in western countries due to its aesthetically pleasing look, health benefits, and powerful flavor. Matcha leaves are grown in many places, but the most authentic and best matcha is harvested in southern Japan. Matcha has been extensively explored and grown in these areas for upwards of 900 years.

Matcha, meaning “rubbed” or “ground” tea, is a tea powder so fine it can settle in the lines of your fingerprint. It comes from the **camellia sinensis** plant, which is the plant all true teas are made of. Its harvesting process, which you will learn about in this guide, differs from most teas, setting it apart and giving it an intense **umami**, or “essence of deliciousness,” flavor.



 Camellia Sinesis – a species of small tree or evergreen shrub commonly called the “tea plant” or “tea tree.”

 Umami – one of the five core tastes (the others are sweet, sour, bitter, and salty). It is a meaty, savory deliciousness deepened by amino acids.

THE MATCHA PRODUCTION PROCESS

The matcha production process is one of the most complicated tea production processes. However, that isn't in vain – the fine powder produced is some of the world's best tea you can get your hands on.

I. Suitable Environments for Growth

The process of growing quality matcha starts with its environment. Matcha cultivation is primarily in Japan, in a place called Uji. Uji is located on the southeast border of the city of Kyoto, the home of a majority of the traditional Japanese arts and aesthetic pursuits; it is commonly regarded as the best possible **terroir** for matcha. Other great terroirs for matcha include Nishio, Shizuoka, and Kyushu. These places are located in the southern half of Japan, remote, and feature mild climates, elevated ground, and fertile soil. These characteristics give quality matcha its bright green color, abundance of umami, and maximum nutrients.

☕ Terroir – a French word that describes how a particular region's environment, especially climate and soil, affect the production of wine.



Fig 1: Tea Field in Wazuki District, Kyoto (Kitani Tea)

II. Harvesting

For many teas, it is common to harvest several times throughout the year. Each harvest is called a “flush.” Though the term may describe the plucking time, it is also used to refer to the tea's specific flavor profile. During the winter, the tea plants will remain dormant; however, as the plants receive more sunlight, they start growing and collecting nutrients. First flush tea

is usually harvested in spring; it is generally the best and most expensive tea, known for its delicacy and freshness. However, the best matcha is harvested once per year, in May.

Before harvest, matcha bushes are covered for 20 days to six weeks to shade the leaves from direct sunlight. Traditionally, straw was used to scaffold the fields; modern matcha growing techniques use large black vinyl sheets or sheets of cheesecloth. In doing so, the plants' chlorophyll and **L-Theanine** levels increase. The chlorophyll gives matcha its vibrant green color, and the L-Theanine concentrates glutamates in order to deliver a sweet umami with no bitter taste. During this period of time, thin, delicate buds start to grow.


 **L-Theanine** – an amino acid that is produced naturally in the tea plant; it has calming and stimulating properties that are present in tea.



Fig 2: Two workers covering tea bushes (Japanese Green Tea)

Once the covering period is over, the youngest, greenest two leaves at the tip of each new shoot will be picked. To preserve the vibrant green and the nutrients, these leaves are steamed within 24 hours after harvest. Afterward, they are cooled immediately in a special cooling machine; the leaves are blown upwards by a blower four times in four separate compartments. This process brings down the temperature of the leaves and separates any that are stuck together.

III. Drying and Sorting

After the leaves are harvested, steamed, and cooled, they are dried in a special furnace. It is about 10 meters long and made of bricks; inside the furnace, a conveyor belt brings the tea leaves through three to five levels of different temperatures ranging from 90 to 180 degrees Celsius. This drying process takes about 20 to 30 minutes in total.

The leaves are then sorted by quality, with the youngest, most tender

leaves being the most desirable.

IV. Destemming and Deveining

After sorting, the leaves are destemmed and deveined, one by one. This is the most laborious and time-consuming step, as all of the destemming and deveining is done by hand. The leaves that make it through all of these processes is called **tencha**. Tencha is then refrigerated until it's ready to be ground.

V. Grinding

The grinding process involves large granite wheels that rotate slowly and gently to avoid scorching of the leaves. In the traditional, hand-milled way, it takes more than an hour to grind 30 grams (2 tbsp). However, there are many The leaves are ground until a very fine powder is produced. Matcha, meaning “ground tea,” derives its name from this grinding process.


 Tencha – tea that matcha is made of; these are the leaves that have been processed, dried, and sorted, but not ground yet. Most tencha is made into matcha.



Fig 3: Grinding Matcha (Jade Leaf Matcha)

VI. Packaging

Once the matcha has been ground to a fine powder, it is transferred into

sealed humidity- and light-proof containers to preserve its freshness for the consumer. Often, matcha will be vacuum-sealed to prevent any humidity or light in. Top quality matcha is often sold in tiny containers, as matcha is best consumed within weeks.

HOW IS MATCHA USED?

From traditional Japanese tea ceremonies to Starbucks' own version of the matcha latte, matcha tea powder is used in numerous different ways across the globe. Though it is a highly symbolic tea drink in Japanese culture, matcha has become known for its aesthetically pleasing green color as well as health benefits in western countries.

Traditional Japanese Tea Ceremonies


Japanese tea ceremonies, or **chanoyu**, are centered around the act of preparing and serving tea. This practice is a contrast to the western traditions of preparing tea before a guest arrives. The art and performance of preparing matcha powdered green tea specifically is called otemae. These events are peaceful and quiet, and demonstrate the values of hospitality and appreciation.


In an otemae, the host may choose to first serve a meal to the guests. After the meal, the host will perform koicha temae (thick tea procedure) and usucha temae (thin tea procedure). In these ceremonies, there are traditional procedures, including amount of tea to make, guest placement in the room, and words to speak. The koicha temae will be described below.

Koicha Temae

Koicha Temae, or thick tea procedure, is considered the highlight of the otemae. A bow signals the beginning of the thick tea procedure. The host then purifies the utensils using **fukusa**, a piece of ceremonial fabric. This includes the tea lid and container, which is turned counterclockwise three times; afterwards, the tea scoop and whisk are thoroughly purified as well.

After purification, the host will take out three scoops of tea powder per guest and put them in a bowl. In the thick tea procedure, all the guests will drink from the same bowl – this is representative of the mutual trust among those present, as well as reflective of how rare and valuable matcha was, centuries ago. It is also linked to the value of **ichiza konryu**, an idea of harmony between a host and guest. The host will then add a ladle of cold water to the hot water, making it slightly cooler and able to bring out the tea's flavor in a more comprehensive way. The water will be poured into the bowl and mixed until no lumps are visible. Then, each guest will take turns drinking, turning the bowl, and bowing.

 Chanoyu – the literal translation meaning “hot water for tea,” this term refers to preparing and serving powdered tea in a ceremonial way.

 Fukusa – square piece of lined fabric used for gift-wrapping or purification of tea ceremony equipment.


 Ichiza Konryu – loose translation meaning, “people occupying one place at the same time, creating one universe.” This is a common principle in the tea world and shows the relationship between hosts and guests.



Fig 4: Koicha Temae by Toshikata Mizuno

After drinking, the guests will ask the host questions like, “What is the name of this tea?” or “Who made this tea?” The host will then pour cold water into the kettle, indicating that the thick tea procedure has come to an end. All the guests will bow, and more questions will be asked regarding the tea utensils. The host will then leave the room, coming back for the usucha temae, or thin tea procedure. Koicha is milder and sweeter than usucha, and is served almost exclusively in Japanese tea ceremonies.

Use in Food

Matcha powder has been used widely in different desserts and East Asian food. This includes candy (matcha Kit-Kats and Pocky), ice cream, pastries (Swiss rolls), protein powders, as well as a topping for various drinks and ice desserts.



Fig 5: Matcha Ice Cream

Spread to the West

Matcha's use in modern drinks like lattes and milkshakes has been on the rise, particularly in the United States. North American cafes like Starbucks have started to use green tea to make matcha-flavored drinks.




Fig 6: Starbucks Matcha Latte (Society 19)

Due to the high demand for matcha the quality of the product has been declining. Traditional, high quality, hand-picked, stone ground matcha takes a lot of time and energy to produce, and is typically very expensive. Many food companies look to food-grade matcha instead: the lowest, still-pure matcha often used in food or baking. Others may also use low quality green tea that is dyed bright green.

Health Benefits

Matcha itself is known for natural ingredients that can benefit ones' health.

- Calms Mind: L-Theanine is known to reduce stress, decrease anxiety, and enhance mood. Matcha creates a focused energy and calm alertness within the body.
- Weight Loss: Matcha increases the body's rate of calorie-burning without harmful side-effects – it's a natural alternative to pharmaceutical weight-loss products.
- Fighting Cancer: Epigallocatechin gallate (EGCG), a **catechin** that matcha is full of, is an antioxidant linked to fighting cancer, viruses, and heart disease. It is reported to be contain three times more EGCG than standard green tea.
- Anti-Aging: Antioxidants, which matcha is abundant with, have been

 Catechin – an antioxidant flavonoid (plant chemical) that can be harvested from many herbs, fruits, vegetables, etc.

shown to slow aging caused by free-radical production. Matcha's antioxidant score was six times that of goji berries.

Other widely reported matcha observations include a reduction in breast cancer recurrence among women who drink three or more cups of green tea a day, as well as claims that the high levels of chlorophyll found in the tea can help detoxify blood.

CONCLUSION

Matcha is a centuries-old tea powder that is inspired numerous Japanese traditional ceremonies and practices. It is still widely consumed to this day, and is gaining popularity through western cafes and trends. The production process of matcha is no easy feat, and required years of honing to come up with the perfect process.



Fig 7: Preparation of Matcha

Next time you get the chance to try a matcha-flavored treat, remember the traditions and culture behind this spritely, bright-green drink.

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