

應無所住



而生其心

## 【What is tea?】

Tea is made from the buds,leaves,etc.of tea plants which belong on the Theaceae family.

Tea is a perennial evergreen plant,and mainly distributed in relatively warm subtropical regions in the world with mildly acidic soil having an annual average temperature of 13°C or higher and annual precipitation of 1300mm or more,and is largely categorized in a Chinese variety and Assam type.

A cold-resistant Chinese variety is mainly cultivated in a temperate region. It has small leaves, is shrubby with less tannin content, and mainly used as a raw material of green tea.

Less cold-resistant Assam type is cultivated in subtropical and tropical regions. It has large leaves and is arborescent with more tannin content, and mainly used as a raw material of black tea, although clear distinction of raw material has not always been made.

There are also various medium types between a Chinese variety and Assam type, which may be categorized into four varieties including Chinese variety with small leaves, Chinese variety with large leaves, Indian variety with small leaves(Xiang),Indian variety with large leaves(Assam type).

The Chinese variety with small leaves is distributed in the southern and eastern parts of China and Taiwan, characterized by low tree height, many branches, small leaves with approximately 4cm length, and hard and dark green leaves with no pointy tip. Hybrids of this variety with small leaves are believed to Hiyama in Akita Prefecture is currently the northernmost limit for cultivation is generally believed to be the area where Murakami-shi in Niigata Prefecture and Daigo-machi in Ibaraki prefecture are connected.

There are two theories regarding native tea bushes naturally grown in the mountains of Kyusyu and Shikoku in Japan: The natural growth theory and migration theory from China. In recent years, some of them are believed to have been migrated in very old times, i.e., prehistorical times.

In a broad sense, expression like ○○tea (○○cha) is used such as houத்துynia cordata tea and mixed tea for example where plant leaves, etc. are dried and infused with hot water or brewed for drinking, while in this textbook, tea is limited to tea plants (Camellia sinensis) as raw materials.



### 【Production of tea】

Tea plants are originally evergreen plants grown in the subtropical zone and are widely cultivated from the north latitude of 45 degrees in general.

The tea plants cultivated in Japan belong to small leaf species of Chinese variety and are relatively superior in cold resistance. They used be cultivated all over Japan including Hokkaido; however the economic northernmost limit of cultivation is generally believed to be the area where Murakamishi in Niigata Prefecture and Daigo-machi in Ibaraki Prefecture are connected, while extremely few tea plants are cultivated in the northern Tohoku District such as Akita Prefecture, Miyagi Prefecture, Aomori Prefecture, etc.

1) Production areas of tea in Japan and their main characteristics are as follows:

#### ☆Saitama Prefecture(Sayamacha)

It is believed to have begun when the Priest Myoe Syonin planted tea in the Kwagoe region in the Kamakura Period. The Sayama region is currently the main production area, known for tea with astringent taste yet strong sweet and brisk taste with unique aroma called “Sayama’s firing aroma” generated with strong firing at the stage of refine processing.



#### ☆Sizuoka prefecture(Sizuokacha)

The tea production Volume here is the highest in Japan, comprising approximately half of the total nationwide tea production, Sizuokacha is known for good quality and abundance. Unique tea utilizing respective natural environments is produced mainly in Makinohara Highland in the middle of the Prefecture as well as base of Mt. Fuji and basins of the Abe River, Oi River, Tnryu River and Ota River. Regarding Kinds of tea, it

is the main production area of regular Sencha and heavily steamed Sencha. Okabe-cho is famous for production of Gyokuro.

Kakegawa city is one of the top green tea producing centers in Japan where the climate is perfect for growing green tea is a perfectly fit for the quality of tea leaves in Kakegawa. You can enjoy the deep green tea color and natural aweet taste. After being basked fully in the sun while growing, tea leaves are steamed for a longer period than the typical green tea during manufacturing Fukamushicha. This extra steaming breaks down the fibers furthermore resulting to easily extract ingredients such as beta-carotene, vitamin E, Chlorophyll in addition to catechin and theanine. They are known to have preventive effects on lifestyle-related diseases. Include Kakegawa deep steamed green tea in your healthy long life just like people in Kakegawa.

Mt.Awagatake (Higasiyama in Kakegawa city)



☆Siga Prefecture(Omicha)

Omicha is mainly Sencha. Sinrakucha, Tosacha, Mandokorocha, etc. are well-known, and Asamiyacha in Sinraku-cho is particularly famous for its high aroma.

☆Kyoto Prefecture(Ujicha)

It is a historical production area that started when Yosai gave the Priest Myoe Syonin tea seeds from Song of China that were sewn on the soil of Toganoo and Uji. Uji-shi is a main production area of gyokuro and tencha(raw material of matcha), and the production volume of both is the highest in Japan. High-grade Sencha is produced in the

southern part of the prefecture with superior refine technique, as it is well-known as Ujicha.

☆Nara prefecture(Yamatocha)

The production area is the mountainous area of the entire Yamato Plateau adjacent to tea production areas in Mie prefecture , Shiga prefecture , and Kyoto prefecture. Tae of good quality is produced.

☆Fukuoka Prefecture(Yamacha)

It is a production area of Sencha, mainly covering the overall Yame region. Gyokuro is produced in the mountainous area mainly in Hoshino-mura, known as the production area comparable to Kyoto.



☆Kumamoto Prefecture(Kumamotocha)

Production is spreading to the overall prefecture mainly in hilly and mountainous area and Hitoyoshi and Kuma regions. The production volume consists of Sencha and tamaryokucha.

☆Miyazaki Prefecture(Miyazakicha)

Pan fired tamaryokucha is produced in the mountainous area at the northwestern part, and Sencha of good quality is produced in the Kirishima Basin by taking advantage of the unique climate. The scale of operation is large on a flat land, and mechanized cultivation is also in progress.

☆Kagoshima Prefecture(Kagoshimacha)

The tea production volume is the second highest next to Shizuoka prefecture. Kagoshimacha is produced all over in the prefecture,i.e., from the foot of Mt,Kirishima to ward Makizono, Osumi Peninsula, and Satsuma Peninsula. Mechanized cultivation is in progress in flat tea fields of the Satsuma region mainly including Chiran and Ei.

【Taste-elements of Tea】



\*Sencha

Table 6 represents the content and quality of the main soluble componets(70% of the total soluble components) of taste in graduated Sencha (none that they do not represent the total content of Sencha).

As can be seen from the table, the most abundant component in green tea is catechins.

**Table 6 Content(%) and taste quality of main soluble components**

Component	High grade	Middle grade	Low grade	Taste
<i>Catechins</i>	14.5	14.6	14.6	
<i>Epicatechins</i>	0.8	0.9	0.9	Bitter
<i>Epigallocatechins</i>	3.4	3.8	3.7	Bitter
<i>Epicatechins-gallate</i>	2.1	2.2	2.2	Astringent, bitter
<i>Epigallocatechins-gallate</i>	8.2	7.8	7.8	Astringent, bitter
<i>Amino acids</i>	2.9	1.5	1.0	
<i>Theanine</i>	1.9	1.0	0.6	Sweet, brothy taste
<i>Glutamic acid</i>	0.2	0.1	0.1	Sour, brothy taste
<i>Aspartic acid</i>	0.2	0.1	0.1	Sour
<i>Arginine</i>	0.3	0.1	0.0	Bitter
<i>Others</i>	0.3	0.2	0.2	Brothy taste, sweet, bit
<i>Caffeine</i>	3.0	2.6	2.4	Bitter
<i>Free reducing suger</i>	2.7	4.0	4.4	Sweet
<i>High-molecular substances precipitated by alcohol</i>	4.9	4.5	5.1	None
<i>Water soluble pectin</i>	0.5	0.4	0.4	None
<i>Subtotal</i>	2.8	27.2	27.5	
<i>Total soluble components</i>	40.5	39.0	37.5	

Nakagawa et al.;Bulletin of the Tea Research Station, No.37(1972)

Bitterness and astringency, which from the base for the taste of Sencha or green tea, are considered to be mainly attributed to catechins. With regard to the four main ingredients, they usually contain a greater amount in order of epigallocatechin-gallate(EGCg), epigallocatechin(EGC) or epicatechin-gallate(ECg), and epicatechin(EC).

The characteristics of the taste, as seen in the Table, are bitterness and astringency. Epicatechin and epigallocatechin, which are known as free catechin, have bitterness and weak astringency. Although the characteristics of the gallate type is bitterness and astringency, they provide relatively little sense that adheres to the mucosal membrane of the tongue or mouth, unlike astringent persimmon.

There are roughly 20 kinds of amino acids which contribute to the brothy taste and sweetness, as described above, and theanine accounts for about half of the whole amount. The next amino acids in relatively largest content are glutamic acid, arginine, aspartic acid, glutamine and serine, and then others in small amounts.

Regarding the taste of these amino acids,

Theanine	has sweetness and a brothy taste but the taste is weak
Glutamic acid	has sourness and a brothy taste and the taste is strong
Arginine	has bitterness
Aspartic acid	has sourness

However, these are the tastes when tasted individually, if an amino acid coexists with another component, its taste changes. For example, it is said that glutamic acid does not make us feel a sour taste when in a neutral solution, and that a mixture of glutamic acid and arginine makes us feel a strong, brothy taste.



#### 【Functionality of Green Tea】

Introduction of functionality of green tea researched and announced medically.

#### **\*Effective to prevent cancer.**

Green tea catechin suppresses growth of carcinogenic substances very effectively in human cells.

#### **\*Prevent arteriosclerosis and stroke. Promote hypotension.**

Green tea provides inhibitory action for substances rising in blood. Green tea promotes enhancing the rate of HDL known as a good cholesterol and prevents arteriosclerosis. Green tea that contains high rate of gamma-aminobutyric acid promotes hypotension. (proven by Kakegawa Study/June, 2009-march 2012. Commissioned project by Kakegawa city from the Ministry of Agriculture, Forestry and fisheries)

#### **\*Lower blood glucose level.**

Polysaccharide helps to prevent diabetes.



#### **\*Prevent teeth decay. Restrain breath odor.**

Catechin and fluorine help to prevent teeth decay. Flavone helps to restrain breath odor.

#### **\*Prevent food poisoning.**

Sterilizing power of green tea is effective against cholera germs, dysentery, vibrio

parahaemolyticus, pathogenic E. coli bacteria O-157, and rotavirus.

**\*Improve intellectual activity and exercise capacity.**

Caffeine stimulates central nerves in cerebrum and improves intellectual activity and exercise capacity. Also caffeine is known to provide cardiogenic action, diuretic effect and spiritually calming effect.

**\*Prevent aging.**

Green tea can suppress production of free radicals and lipid peroxide in our bodies and prevent aging. Green tea is more effective than vitamin E and can strongly suppress mutation and have anti-oxidative effect.

**\*Beauty and Health**

Vitamin C in green tea is relatively resistant to heat and can preserve for a long time. Taking abundant vitamin C increases resistance against infection of viruses and is effective to prevent many kinds of sicknesses. Vitamin C also works to build skin elasticity and helps to retain moisture in skin. It also prevents forming melanin pigment which creates blotchy complexion.

**\*0 Calories and Abundant Minerals.**

Green tea is high in alkalinity and has many kinds of minerals to prevent acidification of our bodies. Green tea has no calories.

**【Classification of green tea and their characteristics】**

*\*By method*



**Sencha**

Common green tea which the leaves are steamed in the regular way.

It is characterized by umami and refreshing astringency, bitterness.



**Fukamuschicha**

Green tea which the leaves are deep steamed to suppress the bitterness. A lot of the taste of tea is drawn out, and it features a deep umami and a refreshing rear end. It is relatively easy to brew.

*By cultivation and processing method*



**Gyokuro**

High-quality green tea from the tea plant shaded from the direct sun and processed in a special way. It is characterized by the blessings of nature and the rich umami of Japanese tea that the craftsmen created, as if it got drunk as if it were drunk.



**Matcha**

Powdered green tea from the tea plant shaded from the direct sun and processed by stone mortar. Umami is stronger than senior items, bitterness in turn, astringent comes out little by little.



*By the harvesting time*



**Bancha**

Green tea made with the coarse leaves harvested after summer time.

Featuring a refreshing astringent, the back entrance is refreshing. Because astringency is catechin, it is a healthy tea.

*By from or part of the leaves*



**Mecha**

Green tea made from the buds of tea plant sorted at the finishing process.

It features a sharp taste.



**Konacha**

Powdered Green tea sorted at the finishing process. You can enjoy a rich taste easily. It's "Agari" (Tea to drink at the end of meal) tea served at an old sushi restaurant



### **Kukicha**

Green tea made from leaf steams sorted at the finishing process.

Clear and lush taste with no astringency.

*By processing method*



### **Kamairicha**

Unlike steamed green tea etc, it is a tea made by roasting fresh leaves in a kettle. It features a unique fragrance. The taste goes well with western food in a dry atmosphere also in the thick.



### **Genmaicha**

Green tea with roasted brown rice.

Fragrant fragrance and mild taste



### **Houjicha**

Aromatic greentea roasted by storong fire.

It features aromatic aroma with a relaxing effect and a pleasant taste. This tea has no caffeine, so you can drink safely even before you go to bed or who is concerned about caffeine.

References (Japan Tea Industry Association / Kakegawa City / Japanese Tea Export Promotion Association)

There are various kinds of Japanese tea, there are various flavors, and there are various indications. Also, as a characteristic of Japanese tea, the taste is also greatly different depending on how you make it. In the end, it is very tasty by brewing people brewing with the heart of "OMOTENASHI", and it is possible to connect hearts and minds. Also, there is a word in Japanese tea words "If you thirsty you drink water, and heart thirstens, you will have tea." We wish from the bottom of our heart that a cup of tea is a part of our hearts. **With Japanese tea, everyone's day will be happy!**



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