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## Black Tea Introduction Part 2 – The Making Process

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Black tea, one of the six tea species, is the sort of fully fermented. It is renowned by its red liquid. Basic making procedures of black tea include withering, rolling, fermentation, and drying. Among them, fermentation is the most significant process of making black tea. It defines the quality of the tea. Meanwhile, plenty of healthy substances are produced during fermentation, which are important to the [health benefit of black tea](#). Also fermentation is the reason why people who caring health loves black tea.

This is the part 2 of our [Introduction of Black Tea](#). Here we will talk about how the black tea is made.

Making process of black tea: [withering](#), [rolling](#), [fermentation](#), dry, sifting.

### The Appearance

Normally black tea is made into strip or granular shape. The forming of both of the two shapes has same demands of fresh tea leaves. The leaves must be tender, thick, covered with plenty pekoe and can retain fresh for a long time. Meanwhile the color should be yellowish green or vivid green, as well as be glossy.



Large leaf species and medium leaf species are the appropriate materials for making black tea. Medium leaf species is better for making strip shape, like Gong Fu black tea and Sou Chong black tea. The appearance is tight and thin, full of pekoe while with abundant buds, dark and glossy. On the other hand, large leaf species is better for making granular shape. The dry tea is evenly shattered, looks glossy, no mottle.

### Fresh Tea Leaves for Making Black Tea

Black tea’s quality is not only connected with its tree species, but also closely related to the environment and planting methods. Usually high mountain areas have cloudy and wet weather, large temperature difference between day and night, and fertile soil. Ultraviolet rays in the sunlight in these areas are higher than plane areas. The UV ray can help nitrogen produce and accumulate in the leaves. Therefore the amount of protein, amino acid and chlorophyll in fresh tea leaves will be increased; on the contrary cellulose’s growth will be slowed down. Thus the leaf and bud will be softer and can retain in fresh for a long time. It can be used to make beautiful strips and granular shapes. Dry tea is bloom and glossy, and presents a taste and aroma of higher quality. However, tea gardens in hilly area and flat area can also plant tea trees of high quality based on the choosing of good tree species, a suitable man-made condition for its growth, and better fertilizer.



Fresh Tea Leaves for Making Black Tea

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**Flower Tea**  
- artistic display and flowery flavor

### Tags

Large leaf species	Medium leaf species
Large and soft leaf with thin cuticle	Thick cuticle, tough and brittle leaf, performs good in stress resistance
Proportion of palisade to spongy is 1:2 or 1:3.	Proportion of palisade to spongy is 1:1 or 1:1.5.
Contains larger amount of tea polyphenol and caffeine. Dry tea has strong flavor, abundant nutrition and can be infused for many times.	Higher amount of carotene and lutein, which can release aromatic substance. Thus small leaf species can produce not only nutritious dry teas but also high aroma teas.
	

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**The Making of Black Tea**

**Withering**

Withering is the most basic process of making black tea. It evenly removes waters in fresh tea leaves. As the water is running off, cell sap of the fresh leaf will concentrate, resulting in a change of the leaf's inclusion. Meanwhile, this process can control the speed of physical change as well as chemical change in the tea leaves in a proper level.



**Why Withering?**

Fresh tea leaf is composed of 75% of water. If the leaves are rolled without withering, they will be easily broken and hard to be shaped into strip. Also cell sap will be lost quickly, which highly affects dry tea's quality. Therefore fresh tea leaves must be withered, in order to remove water and reduce the tension of fresh cells, thus the leaf will be softer and tougher, providing a better condition for rolling and shaping.

**Three Main Methods of Withering When Making the Black Tea**

Presently there are three ways of withering: sun withering, indoor withering, and using of withering trough.

*Sun Withering*

Put the fresh leaves outdoors under the sun. The heat from sunlight will release the water in fresh

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leaves. This method is fast, easy to apply, and no fuel require. But it is limited by weather condition.



*Indoor Withering*

In case the weather is not appropriate for sun withering, indoor withering is another proper way for withering. Set several withering shelves in a room. Then put the bamboo trays which carry the fresh leaves on the shelves. With normal room temperature and proper process, the leaves will wilt naturally. This method can produce tea leaves of good quality.



*Using of Withering Trough*

Withering trough is a manually controlled machine that can wither the tea leaves with heat. The machine has a blast engine which blows hot air crossing the leaves. The hot air can provide enough heat to evaporate water; meanwhile it takes moisture away from the leaves, which helps the water evaporation as well. Consequently, this method can solve the problem of weather condition in sun withering and indoor withering. If the worker has excellent skill of using the machine, he could have the products of the same quality as leaves of natural withering.



## **Rolling**

### **The Function of Rolling**

The significance of rolling is on the forming of black tea’s quality and appearance, especially strip-shaped tea. Rolling will break the leaf cell and can push out cell sap, promoting the enzymatic oxidation of polyphenols. This is a basis of forming black tea’s aroma, color and flavor. Also, rolling determines the strip shape of black tea – tea leaves are shrank during rolling, and twisted into tight and thin strips. As the cell sap is squeezed out to the surface, dry tea leaves will present glossy dark color. Soluble substance in rolled leaves is easier to be dissolved, increasing the density of tea liquid.

**An Important Process in Rolling: De-agglomeration**

Lots of heat will be produced during rolling, especially in summer and autumn, which will strongly influence the effect of rolling. The heat must be released in time, in order to control the speed of oxidization of polyphenols. Accordingly, de-agglomeration is aiming to lower the heat in the leaves.

**Fermentation – The Secret of Black Tea**

Fermentation of black tea is the series of chemical changes that happen under the assistance of enzyme during making process, mainly refers to the oxidization of polyphenols. Fermentation is the key process determining black tea’s quality. It promotes the oxidization of polyphenol in the tea leaf with the help of enzyme; meanwhile other chemical substance will change, too, making the green tea leaves into red color. The unique aroma and flavor of black tea will then be formed.

Five significant factor in Fermentation	
<b>Temperature</b>	Proper temperature for fermentation is usually 2 – 6°C higher than normal room temperature, sometimes even in larger difference. 30°C is best temperature for fermentation; therefore the room temperature should be at 24 – 25°C.
<b>Humidity</b>	An experiment result from Hunan Tea Research Institution proves that high humidity is better for fermentation. When humidity is at 63% - 83%, motley spots and dark shades in the leaves can reach to the percentage of 25% - 32.5% in tea leaves; while humidity rises to 89% - 93%, they will decline to 16% - 18.6%. Consequently, the fermentation room should be kept in humid condition, at the humidity of 95% or higher.
<b>Ventilating</b>	Keep the fermentation room ventilated can provide sufficient oxygen for chemical changes, as well as remove the carbon dioxide which produced in fermentation. Normal way is to install exhaust fan on the wall of the fermentation room, or to open the door or windows often to let fresh air in.
<b>Laying</b>	When the leaves are ready for fermentation, they will be laid in bamboo trays and be put in the fermentation room. Yet how the leaves are laid will affect the providing of fresh air and the temperature in the leaves. If the leaves are laid too thick, they will be lack of fresh air and be warmed up quickly; on the contrary, if the leaves are laid too thin, they will lose temperature easily. The leaves are usually laid in the thickness of 8 – 10 centimeters.
<b>Fermentation Time</b>	Fermentation begins from rolling. Starting from that time, fermentation will take 3 – 5 hours in spring due to lower temperature. While it is hotter in summer and autumn, fermentation will take shorter time in 2 – 3 hours.

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queries :-

- a) How do you find the degree of Oxidation through Chemical Analysis ?
- b) How can the degree of burning be determined through Chemical Analysis ?
- c) How do you find the degree of burning through Chemical Analysis ?
- d) How can the colour of made black tea granules can be linked to degree of burning during drying ?

TeaVivre response:

10/15/2013

Hello Bimall. Your questions are quite professional and specific, and unlikely to be answered by us, because these questions are targeted on the key of black tea's producing: how to control the temperature during the process of fermentation and drying. This is not disclosed to the public. The only thing we know is the producing standards, like at what temperature should the leaves been fermented, which was introduced in this article. But meanwhile we are looking for the answers in some relative books and tea manufacturers. If we know it, we will inform you as well.

k :

6/29/2013

Hi, drinking tea with loose leaves not teabag...are they all caffeine free?  
I have friend who bring me tea (not teabags)from china, korea or japan....and they are expensive....i enjoyed drinking the green tea and first time trying the black tea.

TeaVivre response:

7/1/2013

hi, tea contains caffeine but it is in a very small amount. Loose tea is indeed more expensive than tea bags, because they are made of higher quality, and higher grade tea leaves than tea bags. So loose tea has better and purer flavor, especially the loose tea from its original places.

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