



Major tea processing practices in India

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Abstract: Tea is world's most popular beverages and is the economical backbones of various tea producing countries like India, China, Sri Lanka, Kenya etc. Indian tea is very much famous in the world, especially Darjeeling tea which is famous for its unique flavour and taste. Among the various types of tea, Orthodox tea is highly demandable among the various types of tea due to its quality. Present article focused on different types of major tea processing in India. In India, mostly three types of tea processing are practices, among them, CTC tea processing is more common followed by Green tea and Orthodox tea. In this paper, step wise details manufacturing process are presented. All the data are extracted during the extensive survey in different world famous tea gardens of Darjeeling hills, terai and duars of Northern West Bengal.

Key words: Tea Processing; CTC tea; Green Tea; Orthodox Tea; India

Introduction

Tea (*Camellia sinensis*) is the most widely drunk beverage across the world, after water (Labbe *et al.*, 2006). Tea becomes a beverage first in the Shen Nong's period in China (about 2737 BC). The first authentic preparation of a cup of tea from made tea and its manufacture was known through the book "Cha Ching" written by Lo-Yu (Sinha, 2010).

In India, tea was first discovered in Assam state growing near Rangpur, now Sibsagar by Major Robert Bruce and his brother C.A. Bruce around AD 1823. After that Lord William Bentinck, the Governor General of India appointed a Tea Committee in the year of 1834 that affirmed the growing of tea bushes that were wild in the hills of Assam. Tea cultivation originally started in Darjeeling district of West Bengal during 1839 by Dr. Campbell, whereas it was spread in terai and duars region of West Bengal in 1862 and 1874 respectively and presently these sub-Himalayan area houses a good number of tea gardens (Kabir and Das, 2015; Chowdhury *et al.*, 2015a, 2015b, 2016a, 2016b).

Major tea producing countries are located in the continent of Asia and the countries like China,

India, Sri Lanka are the major producers. African tea growing countries are located mostly around the tropical regions where the countries like Kenya, Malawi, Rwanda, Tanzania, Uganda are the major producers.

Apart from these countries, some quantities of tea are also being produced by South America (Argentina, Brazil and Peru), the Middle East (Iran and Turkey) and the CIS (Russia and Georgia) (Basu Majumder *et al.*, 2010). Besides this Bangladesh, Nepal, Taiwan, Indonesia, Vietnam, Thailand, Mozambique, Ecuador, South Africa, Mauritius, Congo, Cameroon, Papua and New Guinea, Australia and New Zealand produces tea (Barua, 2008; Sinha, 2010). India mainly process three types of tea viz., Crush, Tear and Curl (CTC) tea, Green tea and Orthodox tea. Some places oolong tea, a traditional tea is also produced by various tribal communities at very less quantity. Instant tea is also produced from CTC tea waste and marketed as tea bag.

Crush Tear and Curl (CTC) tea:

Tea is one of the most ancient popular beverages consumed around the world. CTC tea is more

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widely consumed than green tea. India is the largest producer of CTC tea and hence it is necessary to focus attention on the processing of CTC tea. The process involves additional steps of aeration, withering leaves for several hours which oxidises the flavonoids as well as darkening the leaves' colour.

CTC tea manufacturing is the contribution of Sir William Mckercher, Superintendent of Amgoorie Tea Estate. He invented CTC machine in 1930. Method of manufacturing CTC tea started gaining importance during 1950s. In recent days, more than 85% of teas produced in West Bengal belong to this category. CTC tea manufacturing technology involves disruption of the cellular integrity of tea shoots (Sinha, 2010); in doing so, the mixing of substrates, polyphenols and the enzymes, polyphenols oxidase is facilitated. This results in the initiation of a series of biochemical and chemical reactions with the uptake of atmospheric oxygen and formation of pigmented hot water soluble polyphenolic compounds, characteristic of CTC or Black tea (Singh, 2005).

Green tea

Green tea is the most popular and widely consumed compare to other types of tea. Green tea is unfermented or un-oxidized tea and manufactured in such a manner that oxidation of green leaf polyphenols is prevented. It is originated from China. It has recently become more widespread in those countries where black tea is manufactured. Polyphenols, amino acids, Theaflavin (TF), Flavanols, Catechins, caffeine and Volatile flavor components are generally present in Green tea (Anonymous, 2011).

Green tea originated in China for medicinal purposes and its first recorded use was 4,000 years ago. By the third century, it became a daily drink and cultivation and processing began. The Japanese tea industry is first green tea produced in 1191. Today, China has hundreds of different types of green teas. Other producers of green tea include India, Indonesia, Korea, Nepal, Sri Lanka, Taiwan, and Vietnam.

Orthodox tea

Orthodox tea is also very popular and widely consumed. Orthodox teas are rolled with machinery in a manner that mimics hand-rolling. All whole-leaf tea is made with orthodox production methods. Orthodox teas are known for its distinctive flavor and taste. Orthodox tea is mainly produced in Darjeeling hills in India. Assam and South India also produce some amount of orthodox tea.

Procedure of different types of tea processing

(Source: Different Tea Estates of Darjeeling, terai and duars of West Bengal, India)

CTC Tea Processing [Fig. 1]

Basic requirements for Manufacturing of good CTC Tea:

Quality Plucked Leaves

1. Quality is inherent in leaves.
2. Standard plucking, fine plucking give good quality tea.
3. Teas produced from coarse leaves will be full of fiber and flaky with poor quality liquors.

Optimum Wither

1. In NE India, light wither around 65% to 75 % has been found to be suitable.
2. Variation in wither depends on the texture of leaves.
3. Coarser the leaves lighter is the wither.

Speed of the Roller

1. It is maintained at a ratio 1:10, speeds being usually at 70:700 rpm.
2. Higher the speed, poorer is the quality of tea due to excessive heat formation.
3. At lower speed cut is proper.

Setting Rollers correctly

1. Incorrect setting would adversely affect the style of made tea.

Teeth Sharpness

1. Rollers must always be maintained sharp.
2. The machine i.e., chasing and milling should be accurate and there must not be any bluntness or burrs.
3. Blunt or inaccurate rollers produce flakey fibrous teas and liquor.
4. Change the roller by 50 – 60 hrs.

Specification of Roller

Temperature in the rolling room

1. The rolling room should be cool and humid.
2. Mist chambers are provided to keep the rolling room cool.

Cleanliness

1. Bacterial contamination at the green leaves processing stage will affect the liquors in the sense that the briskness will be affected adversely.
2. The machine must be kept always very clean

Black tea processing consists of the following unit operations:

1. Plucking (Standard)
2. Weighing & transporting to the factories
3. Spreading
4. Withering (partial removal of moisture)
5. Cutting/disruption (size reduction)
6. Rolling
7. Fermentation/oxidation (biochemical reactions in the presence of oxygen)
8. Heating and Drying (completion of moisture removal)

9. Sorting and Grading (fibre removal; grading based on size)
10. Gapping
11. Packing and transporting

1. Plucking (Standard)

Plucking of leaves is very important for the production of good CTC tea. If the tea is produced from coarse leaves, the quality of tea will be decreased.

Leaf plucking should be done in the morning and processing can begin the same day. For good quality tea, processing will be start within two hours of harvesting of fresh tea. If waiting until the next day to process the tea, the quality will be much lower, because fermentation will have begun. During and after plucking, utmost care should be taken not to bruise or damage the fresh leaves. For example, leaves should not be compressed (pack down) in the harvesting baskets. The fresh leaves should be placed out of the sun, in a cool well-ventilated place.

2. Weighing & transporting to the factories

Weighing and transport of tea leaves should be done very carefully because all the plucked leaves should reach the factories within 12 hours after plucking. During transporting, leaves should carry with plenty of aeration not in compressed manner.

3. Spreading

Spreading of leaf should be uniform across the length and breadth of the trough. Bunching of wet leaf should be avoided. Air velocity should be such that the leaves are not lifted up. Leaf should be handled carefully. Drainage during spreading must be avoided and the laborers must not be allowed to walk on the leaf. Withered leaf bruises more easily.

4. Withering (partial removal of moisture)

Withering is carried out to prepare the green tea shoots biochemically and physically for subsequent manufacturing operations. Withering essentially consists of storage of green shoots for about 12 to 20 hours with the partial removal of moisture (known as physical wither) from the leaf. Withering is accompanied by certain chemical changes (known as chemical wither) which may affect fermentation and thereby, the quality of the final product. Chemical wither is essentially a time temperature dependent process. Some of these changes are dependent on moisture loss while others are independent.

- a) **Natural Withering:** The fresh tea leaves are laid out in thin layers on mats staked one above another and dried in the fresh air for at least 20 hours.

- b) **Artificial Withering:** The leaves are laid out in layers of up to 20 cm. thick on a mesh. The meshes are placed in a tunnel; through which warm air mixed with fresh air is forced. This considerably reduces the total withering time. Around 70% residual moisture suitable for tea processing of the withered green leaves.

5. Cutting/disruption (size reduction)

Cutting or disruption of tea leaves is done through Rotorvane.

6. Rolling

This machine consists of two separated metal rollers, placed close together and revolving at unequal speeds, which cut, tear and twist the leaf. CTC machines are widely used. Rolling is the next step of manufacturing in which cell membranes are damaged allowing mixing of chemical components of leaves with enzymes. This technique is also known as maceration.

1. It is known as preconditioning roll.
2. This roll is usually very gentle.
3. During rolling the temperature should never be rises beyond 35°C (95°F). Temperature higher than 35°C detrimental (TR formation) to the quality of made tea.

7. Fermentation/ oxidation (biochemical reactions in the presence of oxygen)

During fermentation, the oxidation process which had begun during rolling is continued. Fermentation takes place in separate fermentation rooms, which need to be kept extremely clean to avoid bacterial infection of the tea. In present days, Continuous Fermenting Machine (CFM) is widely used for fermentation in tea industries. It consists of single circuit of trays, top run of which passes through the fermenting chamber. Trays exposed at the feed end take their leaf load through a conveyer and are made to travel slowly. The tray fed up to 15 cm depth with rolled leaf entering the fermenting chamber through which humidified air is supplied. A spreader and leveler are used to adjust the spread and height of thickness. As soon as the tea has acquired a copper red colour, the correct degree of fermentation has been reached, and the process must be halted by drying. The fermenting chamber can be a single unit or may consist of modules with arrangement of blowing air across. The fermenting time can be regulated by adjusting the tray speed.

8. Heating and drying (completion of moisture removal)

Type of drier:

In West Bengal, mainly two types of driers are use in CTC tea manufacturing. They are-

1. ECP (Endless Chain Pressure Drier)
2. VFBD (Vibratory Fluid Bed Drier)

During drying the polyphenol oxidase enzyme should be properly inactivated and the desirable properties are fixed. The moisture content should be reduced to 3.5% whereby the aroma becomes established and the leaves chlorophyll is converted to pheophytin which has taken on their typical black colouration. It helps in bonding of polyphenols with the protein and brings down the astringency. Ionone, pyrazines, pyridines, quinolins and 10-15 % TF is formed during drying. In present days, mostly VFBD is used in CTC tea manufacture.

Temperatures on VFBD:

- **Inlet temperatures:** 205°F-265°F
- **Outlet temperatures:** 95°F-113°F
- Difference between inlet and outlet temperature should be 90°F otherwise than it stewing and more than it case hardening.

Precautions:

1. Temperature of inlet and exhaust air.
2. Volume of air.
3. Quantity of leaf fed (i.e. thickness of spread).
4. Period of drying (through put time).
5. Fluctuation of temperature.

9. Sorting and grading (fibre removal; grading based on size)

1. The CTC bulk is passed through a fiber extractor and a pre-sorter.
2. From pre-sorter tea goes to the Vibro Screen Sorter.
3. Different grades of CTC tea will come out through different mesh of Vibro screen sorter. Mesh size & different grades are given below-

Mesh Size	Grade
Above 8	Large ball (go for RP)
8	BOPL
10	BOP
14	BOPSM
18	BP
24	OF
30	PD
36	D
50	CD

10. Gapping

During the process of sorting and bulking tea picks up moisture and it reaches above 4%. Before packaging it is detrimental. It is therefore necessary to final fire the tea in order to bring down the moisture content to about 3%. This process is known as 'gapping'. Drying of tea for 10 min at 220°F before packaging is essential.

11. Packing and transporting

1. Tea should never be forced down by hand.
2. The CTC teas made from withered teas, damage will be more. It should be handled carefully.
3. Tea should be packed full otherwise oxygen in the free space activate the enzymes, the quality will deteriorate.
4. During packing moisture percentage, should not be more than 4%, preferably 3% during packing.

Factors related to quality of CTC

Quality of the end product in any process industry depends mainly on the raw material and tea is no exceptional. Quality of made tea depends on various factors:

1. Plucking Standard: Black, Standard plucking.
2. Plucking around: Shorter round of plucking gives good quality tea.
3. Age of the bush
4. Stage from previous pruning
5. Beside those, in the same shoot, the chemical composition of Bud, 1st leaf, 2nd leaf, other leaves, stem etc.





Fig. 1: Various steps of CTC tea processing

Green Tea Processing [Fig. 2]

(Source: Different Tea Estates of Darjeeling, terai and duars of West Bengal, India)

Green tea manufacturing process is very complicated than other types of tea. The steps of processing Green Tea are given bellow-

❑ Plucking:

➤ Shoots are picked from garden and export them into factory.

N.B.: Shoots from pruned tea can give better quality Green Tea than un-pruned tea. Because-

- Pruned tea has more number of tips.
- Phosphorus fluorescence is more.
- More pubescence hair.
- Polyphenol content is more.

❑ **Roasting or Steaming:** The collected leaves from garden are roasted or steamed in Hexagonal Roller to arrest enzymatic activity. During roasting or steaming in high temperature destroy the enzymes.

Hexagonal Roller:

- Capacity: 250 kg
- Rolling speed: 20 rpm
- Time: 6-8 minutes (depending of steam). Time can be reduced by increasing steam.
- The Hexagonal Roller does not stay at one place. It keeps on moving up and down to give equal steam into the tea leaves.

Roasting Criteria:

- Some steam coming out from Hexagonal Roller.
- Green or dark green droplets start dropping.
- Colour becomes lightest brown yellow.
- If 2+buds and 3+buds break during roasting, then it means roasting is not done properly.
- After completion of roasting leathery appearance comes.

❑ Cooling:

- After roasting the leaves are shifted to the Cooling Floor for cooling. If cooling is not done properly after roasting, then over roasting takes place.

N.B.: Due to overheating leaves becomes red.

Cooling Floor:

- 3 ft deep.
- Covered with stainless steel.
- Diameter: 4ft X 20ft, 80 sq ft.
- In cooling floor hole size 2 inches and holes are present in staggered form.
- In cooling floor draining out is important. Drains should have one side slope.
- Fan: In case of 1 roller then one 2HP fans of 13500 CFM. In case of 2 rollers then one 5HP fans of 23000 CFM or two 2HP fans are enough.
- Diameter: 4ft X 20ft, 80 sq ft.
- In cooling floor hole size 2 inches and holes are present in staggered form.
- In cooling floor draining out is important. Drains should have one side slope.
- Fan: In case of 1 roller then one 2HP fans of 13500 CFM. In case of 2 rollers then one 5HP fans of 23000 CFM or two 2HP fans are enough.

❑ **1st Rolling:** In first rolling the leaves are lightly twisted and removed the water. In first rolling leaves are rolled for 15 minutes.

- For one roaster: Roller 36 inches and Capacity 250 kg.
- For two roasters: Roller 46 inches and Capacity 500 kg.
- No pressure is given during rolling.
- Time: 20 minutes.
- Speed: 45 rpm.

Purpose:

- To make the leaves twisted.
- To remove water.
- To break the stems.
- To make the size ready for 1st drying.

❑ **1st Drying:**

➤ For drying, conventional drier or quality drier is used.

- Temperature:
 - ❖ Inlet temperature: 200°F-210° F.
 - ❖ Temperature range: 180°F-210° F.
 - ❖ Temperature should not be less than 180° F and more than 210° F.
- In case of drying two factors are very important.

a) Run through time: 18 minutes.

b) Outlet moisture: During outlet leaves, should have 18% moisture.

➤ A 6 ft drier can dry 400-450 kg green leaves.

Purpose:

- To remove the moisture from the tea leaves and stabilizes the shape.
- To develop the aroma.
- To improve quality.

❑ **2nd Rolling:** After that 2nd rolling is done. Two types of roller is used during 2nd rolling.

a) Roller 36 inches and Capacity 90-100 kg.

b) Roller 46 inches and Capacity 250 kg.

Time: 45 mins with a sequence of with pressure and without pressure:

Open	20 minutes
Light pressure	10 minutes
Open	5-10 minutes
Medium pressure	10 minutes
Open	5-10 minutes
Hard pressure	5-10 minutes

N.B.: Due to extra moisture pressure is given selectively. If pressure is too much twisting will not take place and cake formation will be there.

❑ **2nd Drying:**

➤ Whatever passing through Googhi they are taken for 2nd drying.

➤ Like 1st drying conventional or equal drier is used.

➤ Temperature: 240°F.

➤ Run through time: 24 minutes.

➤ After 2nd drying final product drops with 2%, 2.2%, 2.5% moisture.

❑ **Sifter:** After 2nd drying leaves are run through sifter.

Purpose:

➤ Fine tips are extracted for good quality tea.

❑ **Ball Breaker:** The fresh unbulked leaves are goes to Mydleton sorter and the bulk mass comes out from 2nd Drying are treated with ball breaker. After treating with ball breaker, the perfect size is goes into Mydleton sorter. It is used to break the balls or clumps formed during rolling.

❑ **Mydleton sorter:** After 2nd drying the leaves passes through Mydleton sorter. The fine leaves are segregated and put into Hexagonal Googhi and the uneven leaves are put into Bukanon breaker.

❑ **Bukanon Breaker:** Bukanon breaker is a leaf twisting machine. It twists the uneven leaves and put into Hexagonal Googhi.

❑ **Hexagonal Googhi:**

➤ It is used as one type of sorter.

➤ It can separate the grades of Mogra-I, Mogra-II, Magra, Superfine, Fine and Laccha.

❑ **Tocklai Tea Breaker (TTB):** Whatever leaves comes in front of hexagonal Googhi they are passed through TTB to break the clumps formed during rolling.

❑ **3rd Rolling:**

➤ It is rarely used after passing hexagonal Googhi or TTB.

➤ Whose size is not perfect they are taken for 3rd rolling.

- Rolling Time: 20 minutes.
- After that some procedure like cooling, drying etc. are followed.

❑ Moisture Test:

- To know whether tea is ready or not moisture test is generally done with Infrared Moisture Meter.

❑ Sorting:

Sorting machines:

Arnott sorter: The dried leaves are introduced in arnott sorter and the fine leaves are coming out.

Mini Java: Mini java separates the stalk parts from tea.

Vibro fibre extractor: It separates the stalk part from the tea.

Magnetic sorter: It removes the magnetic materials from the tea.

Colour Sorter: Color sorter removes the white stalk part from the tea.

❑ Refiring and Packing:

- Before packing refiring is done.
- Lower grades are put in Hessian Bag.
- Better grades are put into Zipper Chain Bag.

❑ Different grades of Green Tea:

Primary Grades:

- a) Mogra-I: Look like FB, FOP of Orthodox.
- b) Mogra-II: Look like FB, FOP of Orthodox.
- c) Fine: Very fine, slightly longer than Mogra-I, II.
- d) Superfine: Looks more fine than Fine grade.
- e) Laccha: Long but twisted.
- f) Mazdana: Very small balls like BP.
- g) Hyson: Very big like small marbles and quite hard.

Secondary Grades:

- a) Magra: Same size likes Mogra-I, II but very light.
- b) Soomy: Fannings comes out of yellow leaves.
- c) Twanky: Broken in nature.
- d) Stalk: All the sticks are present and reddish brown in colour.







Fig. 2: Various steps of Green tea processing

Orthodox Tea processing [Fig. 3]

(Source: Makaibari Tea Estate and other Tea Estates of Darjeeling hills of West Bengal, India)
Orthodox tea manufacturing process steps are not identical to that of CTC or Green Tea manufacture. The steps involved in orthodox tea manufacture are given below-

Plucking

Shoots are picked from garden and export them into factory with most care.

N.B.: Orthodox tea mainly varies with pruning style, Jat, Clone, Altitude and Weather. Shoots from pruned bush can give better quality Orthodox Tea than un-pruned tea. Quality also differs in different flushes.

Pruning characters:

- LP – Leaves provides good in second flush.
- UP/DS – Provides good in first flush.
- Pruned clonal bushes has more number of tips.
- Phosphorus fluorescence is more in pruned bushes.
- Newly borne shoots hairier.
- Polyphenol content is more in LP bushes.

Jat:

- China variety - Quality is good but quantity is low.
- Camode variety – Quality and quantity is average.
- Assam variety – Quality low quantity high.

Flush:

- In first flush plucking round should be 4 days.
- In second flush round should be 5 days.
- After that it should be 5 – 6 days.
- Shorter the plucking round better the quality.

Withering

Withering is carried out by spreading the leaves thinly on withering trough. It is made of tightly stretched wire-mesh, weld-mesh and netlon. The leaves are unloaded very carefully into the withering troughs. Leaves are to be categorized according to its size and quality. The leaves are kept 16-18 hours in withering trough with normal air according to temperatures. Light cooled air is passed below the withering trough during warm weather and lower elevation leaves. Hot air is required for higher elevation leaves and during rainy season. In case of orthodox tea manufacture in the plains wither should be aimed to achieve 60-65% moisture. After withering leaves are transferred smoothly and gently for rolling. Because the rough handling of leaves will break the leaf and degrade the quality. Withering depends on moisture level, leaf size and temperature.

Rolling

After a satisfactory withering obtained the leaves are ready for rolling in orthodox rolling machine. It twists the leaf, breaks it up and expresses the juices. Leaves are placed gently to the roller. Rolling time differs 20 minutes' loose roll to 120

minutes roll as per leaf condition and temperature. After proper rolling leaves are transferred from roller to shifter in case of rough leaf. The used machines vary in size and design.

Orthodox rolling machine Specifications:

24" and 36" Roller:

- **Normal Speed:** 60 rpm
- **Eccentricity:** 101 and 203 mm
- **Travel of Table:** 202 mm circular
- **Travel of Hood:** 406 mm circular
- **Power Required:** 10 H.P. x 1140 RPM
- **Capacity:** 80-90 kg. withered leaf
- **Floor Space Required:** 2000 x 2100 mm
- **Table:** Single piece high quality alloy brass set-in cast iron outer ring
- **Hood:** Brass sheet 10 SWG with stiffeners
- **Floating Cap:** Single piece high quality aluminium
- **Bearings:** All heavy-duty taper roller bearings and ball bearings
- **Pressure Cap:** Automatic lifting gear arrangement and height indicator clock
- **Standard:** Standard components throughout thereby covering the whole range of rollers with one set of spares.
- **46" Roller:**
- **Normal Speed:** 48 rpm
- **Eccentricity:** 101 and 203 mm
- **Travel of Table:** 202 mm circular
- **Travel of Hood:** 406 mm circular
- **Power Required:** 20 H.P. x 1440 RPM
- **Capacity:** 140-160 kg. withered leaf
- **Floor Space Required:** 2250 x 2350 mm

Shifter:

After rolling the leaves are transferred to the shifter. The fine leaves are going for fermentation and bulk formation was goes for rolling again.

Fermentation:

The next stage after shifter is fermentation. The rolled leaves which are passes through shifter are sifted for fermentation in Tray fermentation or Table fermentation. Fermentation depends on temperature and it may vary as per session. During fermentation, the leaves change their colour and turn into a dark coppery colour and typical aroma develops at this stage. The ideal conditions for fermentation are leaves temperature 30°C, moisture 55%, pH 4.5 to 5.0 and relative humidity 75% to 80% with a difference of 2° in wet bulb & dry bulb. When the sufficient colour and typical aroma develops (nose assessment) then fermentation is judged to be completed.

Drying/Firing:

The fermented leaves are transferred to drying machine for drying/firing. Endless chain pressure driers (ECP) commonly used in orthodox tea manufacturing. The fermented tea dried / fired up

to 22-25 minutes. The ideal temperature of the drier is 220°F – 250°F and difference between inlet and outlet temperature should be 90°F. The other types of driers which are also used in orthodox tea manufacturing are hot-feed drier, fluid-bed drier and ding dong drying machine. Ding dong drying machine is used for small amount of leaves and it is difficult to operate.

Sorting and grading:

Sorting machines:

Arnott sorter: The dried leaves are introduced in Arnott sorter and the fine leaves are coming out.

Mydleton sorter: It performs the grading operations and makes tea stalks free.

Vibro fibre extractor: It separates the stalk part from the tea.

Magnetic sorter: It removes the magnetic materials from the tea.

Different grades of Orthodox Tea:

Whole leaf:

FP- Flowery Pekoe
 FTGFOP- Fine Tippy Golden Orange Pekoe
 TGFOP1- Tippy Golden Orange Pekoe
 GFOP- Golden Flowery Orange Pekoe
 FOP- Flowery Orange Pekoe
 OP- Orange Pekoe
 BOP- Broken Orange Pekoe one
 GFBOP- Golden Flowery Broken Orange Pekoe

Brokens:

BPS- Broken Pekoe Souchong
 GBOP- Golden Broken Orange Pekoe
 FBOP- Flowery Broken Orange Pekoe
 BOP- Broken Orange Pekoe
 GOF- Golden Orange Fannings

Fannings:

FOF- Flowery Orange Fannings
 BOPF- Broken Orange Pekoe Fannings
 OPD- Orange Pekoe Dust
 OCD- Orange Churamani Dust
 BOPD- Broken Orange Pekoe Dust
 BOPFD- Broken Orange Pekoe Fine Dust

Dust:

FD- Fine Dust
 D. A- Dust A
 Spl. Dust- Special Dust
 G. Dust- Golden Dust

Packing:

Packing is done in paper sacks with 4-5 layers of inner lining to restore the quality and avoid any moisture loss. Packing is usually done in 18 kg to 30 kg depending upon the volume. Small packing of 2 kg, 5 kg and 10 kg are also made as Darjeeling teas are very expensive. Sometimes good quality teas are packed in good looking wooden boxes after packing in paper sacks.





Fig. 3: Various steps of Orthodox tea processing

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