

Module 11: Pepper products

11. Pepper products

Black and white peppers are the two major primary products of *Piper nigrum* which are internationally traded. There are several other products which are also internationally traded but in small amounts (less than 2%), such as green pepper, pepper oil and oleoresin. Black pepper is the dried unripe berry, while white pepper is the mature berry from which the mesocarp has been removed. Black pepper is used as a direct spice and is also processed into pepper oleoresin and oil. White pepper is used mostly as a direct spice. Black pepper is used in a wide variety of foods, particularly meat products, while white pepper is used in light-colored sauces, mayonnaise, and cream soups when dark particles are undesirable.

11.1 Black Pepper

Among the spices, black pepper is the king. It is the most important, most popular and most widely used spice in the world. It has extensive culinary uses for flavoring and preserving processed foods and is important medicinally. South West India is the traditional home of this important spice, particularly the Western coastal regions of South Peninsular India (the Malabar Coast). Black pepper was the first oriental spice to be introduced into the Western world, and was well known among the Romans and Greeks. In the middle age, pepper assumed great importance in Europe. Pepper is also used in medicine, as a carminative and for aiding in digestion, and in curing the common cold.

Black pepper is prepared from whole mature pepper berries. The harvesting is carried out when the green berries commence to acquire a yellow coloration; the age of the pepper berries is usually 6–7 months. The spikes are picked at weekly or fortnightly intervals over a period of 1 to 2 months. Black pepper is obtained by drying the ripe berries. The collected berries are scalded with boiling water for about 10 minutes, to provide surface disinfestation and fermentation process to get started, which turns the berries black. Then they are spread out to dry in the sun for three or four days. The yield of dried black pepper is around 30-35% of the fresh berries.

The black pepper processing method in several producing countries varies especially the treatment prior to drying process. Usually after harvesting the pepper berries are removed from the spikes by trampling, beating with stick or by hand. In the next stage the pepper berries are spread out on bamboo mats, or concrete platform in the sunlight. Sometimes, after harvesting the pepper berries are piled up for 2–4 days to let the browning fermentation occur and the berries are easier to be removed from spikes. The sun drying for the black pepper processing takes between 5 and 7 days depending on the thickness of berries and weather condition until moisture is reduced to between 12–13 per cent. After drying the pinhead and light berries are separated by winnowing.

The quality of black pepper is determined more by organoleptic factor than the results of constituent analysis. For black pepper which is used as spice in the whole or ground form, the

appearance is of primary importance to buyer. Bold sized pepper corns with a uniform dark-brown to black colour fetches the best price. The aroma and flavour imparted by the volatile oil is of greater significance than the absolute pungency level when the spice is sold for domestic culinary purpose. It is widely used by the food industry including processed meat and confectionery products. Black pepper is mostly used in three forms: powder, oil and oleoresin. Most countries import whole pepper berries and convert them into powder. Since the pepper oil and oleoresin and all the flavor characteristics of the original spice are retained, quality-conscious food processors prefer whole black pepper.

11.2 White Pepper

India is the fourth largest pepper producer in the world, with production of 67,000 metric tons in 2008. Annual white pepper contribution in India is less than 250 metric tones against the world demand of more than 1,50,000 metric tons. Indonesia is the largest white pepper producing country, converts about 50% of its pepper to white. Malaysia and Brazil convert about 10% and 5% of their pepper to white respectively.

- Indian Name : Safed Mirch
- Botanical Name : Piper nigrum
- Family Name : Piperaceae
- Parts Used : Seed

White and black peppers are both obtained from the small, dried berry called the peppercorn, which grow on the pepper vine. Berries are harvested when about 75% of them have a red or reddish-orange color. White pepper is obtained by soaking the fully ripe berries in water for about 6-8 days. The flesh of the fruit softens and decomposes, which is further rubbed for getting the seed. Thereafter, they are dried in the sun to a white-beige color. White pepper has a higher content of piperine compound as compared to black pepper so has a hotter taste. The aroma is mild. About 100 kg (220 lb) of green berries can produce approximately 25 kg (55 lb) of white pepper. The discarded hulls can be processed for pepper oil.



Fig.11.1. White pepper whole and powder

White Pepper is used whole in pickling spices and marinades. Ground White Pepper is used in light colored foods, such as sauces and soups and is especially popular in European cuisine. White Pepper is obtained primarily from Indonesia, Malaysia and Brazil. In addition to its use as a spice, White Pepper is used medicinally as an aromatic, stimulant and carminative to ease digestive complaints such as dyspepsia, constipation, nausea and flatulence. White Pepper is also viewed as a general digestive aid.

There are chemical, biological and physical methods for the conversion of pepper into white pepper. White pepper is produced conventionally from ripe berries by the water steeping and retting technique. In the water steeping and retting technique, ripe berries and berries that are about to ripen are harvested, threshed and heaped in tanks through which water is allowed to run for 7–10 days. In Indonesia (which is the largest producer and exporter of white pepper) the pepper berries are tied in gunny bags and immersed in running water in streams or rivulets. During the process of water steeping the outer skin (pericarp) gets rotten and can be removed easily by rubbing and the deskinned fruits (seeds) are further washed in clean water and sun dried. Often the deskinned fruits (seeds) are kept immersed in bleaching powder solution for a day or two to give better color to the product. The yield of white pepper is around one quarter instead of one third recovery of dry black pepper. Major limitations of this retting process include quality deterioration of the product.

Some other value added products of pepper are classified as:

- 1) Green pepper based products,
- 2) Black pepper and white pepper based products,
 - (1) Green pepper based products:
 - ❖ Canned green pepper in brine
 - ❖ Bottled green pepper in brine
 - ❖ Bulk packaged green pepper in brine
 - ❖ Cured green pepper (without any covering tissue)
 - ❖ Frozen green pepper
 - ❖ Freeze dried green pepper
 - ❖ Semidried or dehydrated green pepper
 - ❖ Green pepper pickle in oil/vinegar/brine
 - ❖ Green pepper-mixed pickle in oil/vinegar/brine
 - ❖ Green pepper flavored products
 - ❖ Green pepper paste
 - (2) Black and white pepper based products:
 - ❖ Black pepper powder
 - ❖ White pepper powder
 - ❖ White pepper whole
 - ❖ Pepper oleoresin

- ❖ Pepper oil
- ❖ Microencapsulated pepper
- ❖ Other pepper products (such as soluble pepper, pepper paste)
- ❖ By-products from pepper waste

SUGGESTED READINGS:

- Green, C., *Export development of essential oils and spices by Cambodia*. 2002, The International Trade Centre, Geneva [SSA-2001-468] and The Ministry of Commerce, Kingdom of Cambodia. p. 100.
- http://www.just.fgov.be/mopdf/2002/03/26_2.pdf
- International Classification for Standards, 2005, Sixth edition, ISBN 92-67-10405
- UNCTAD/WTO, I.T.C., *Global Spice Markets: Imports 1996-2000*. 2002, ITC: Geneva. p. 80.

