



## Post Harvest Processing of Turmeric

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### INTRODUCTION

Turmeric (*Curcuma longa L.*), family zingiberaceae, is a spice and medicinal plant widely distributed and cultivated throughout the tropics. It is commonly used as spice for flavouring and also as a natural colorant with a variety of applications such as condiment, cosmetic and dye besides being a potential source of therapeutically important molecules.

Turmeric possess power full antioxidant properties hence the medicinal value of turmeric has been recognized since time immemorial in the Indian system of medicine. The cured, dried and ground rhizomes provide turmeric powder. It is one of the principle ingredients of curry powder which is a blend of many spices, common salt and farinaceous matter. It is also act as appetizer and aids digestion.

### 1. Washing



Rhizomes are separated after digging out from the soil. Root hairs and poorly developed and shrivelled portions are then removed. These are washed, so that particles of soil, spray residues and non-useful particles attached to rhizomes are removed. For these rhizomes are kept soaked in water throughout night. Later on, rhizomes are taken from the water and go for blanching.

## 2. Boiling/Blanching/Cooking



Boiling fresh rhizomes in water until soft before drying. It removes the raw odor, reduces drying time and yields a uniformly coloured product. Boiling process is continued till white foams start coming out, with a special quality of flavour. While boiling the water level should be 5-7 cm above the rhizomes. For quick and proper boiling, the rhizomes are covered with turmeric leaves 5-7 cm in thickness and plastered with mud and cow dung. The time required for the desired level of cooking varies from 1 hour to 4-6 hour, depending on quality. Rhizomes are tested by pressing with fingers. If rhizomes are soft and inner colour has become yellow then this process is said to be complete.

## 3. Drying



Rhizomes after cooking are stored in heaps for overnight and then spread over a hard and clean ground. Dry in the open in 5 to 7 cm thick layers on uncoated plain bamboo mats or concrete drying floor. The material turned 2-3 times to ensure uniformity in drying. It may take 10 to 15 days for the rhizomes to become completely dry. The moisture content of dried rhizomes is generally being less than 5%. It should be dried on clean

surfaces to ensure that the product does not get contaminated by extraneous matter. After drying these become hard and solid. Artificial drying gives a brighter product than sun drying. When the dried finger breaks cleanly with a metallic sound, it is sufficiently dry. Completely dried turmeric holds 5-6% moisture content.

## 4. Polishing



Dried turmeric has a poor appearance and a rough and dull outer surface with scales and root bits. In order to smoothen the rough and hard outer surface of the boiled dried turmeric and also to improve its colour, it is subjected to polishing. There are two types of polishing – manual polishing and mechanical polishing.

**Manual polishing:** The appearance of dried rhizomes is improved by rubbing the dried turmeric on a hard surface or trampling them under feet wrapped with gunny bags. Shaking the rhizomes with stones in a gunny bag or bamboo basket is also practiced. By this process colour of turmeric becomes bright or shining.

**Mechanical polishing:** Mechanical polishing drums have been developed for handling large quantities. For this drum having 0.9m diameter and 0.6m length is used. Polishing is done for at least 7 minutes. During this period water is also sprinkled which causes improvement in the colour of turmeric. The material loss during polishing is from 2-8% depending on the degree of polishing.

## 5. Colouring



Exported turmeric is given special colour by mixing yellow so that powder and processed materials can give better look and quality by a dry or wet process. In the dry process, turmeric powder is added to the polishing drum in the last 10 minutes. For coating 100 kg of half polished turmeric, 200 g of turmeric powder is required. When fingers are uniformly coated with turmeric powder, they are dried in the sun. In the wet colouring process, turmeric powder is suspended in water and mixed inside by sprinkling inside the polishing basket. After colouring is complete, these are dried for one week. Later on, these rhizomes are kept in sacks for exporting.

## 6. Grinding/Powdering



Traditionally dried and polished turmeric are cut into pieces and beaten in mortar and pestle. After this, it is milled or ground with hand operated chakki. Hammer mill is also used for grinding. Powder should be so fine that it passes through 300-micron sieve and nothing is left over the sieve.

## 7. Packaging



Cured dried turmeric with moisture content of 15-30% is transported in gunny bags to assembling centres where it is further dried, polished and coloured, if necessary. Dried turmeric is graded according to Agmark specifications before bagging in strong gunny bags generally in 65-75 kg lots. The bags are then transported to warehouses and port centres. The colour of turmeric has been found to be stable as long as it is not exposed to sunlight.