

Desiccated coconut

● **Sardar Singh Choyal**, Deputy Director, &
Jyothi K Nair, Food Processing Engineer, CDB, Kochi.

Desiccated Coconut Powder is obtained by drying ground or shredded coconut kernel after the removal of brown testa. It finds extensive use in confectioneries, puddings and many other food preparations as a substitute to raw grated coconut. In India the product is manufactured by units mainly scattered in Karnataka, Tamil Nadu, Kerala and Andhra Pradesh

A study conducted by the Coconut Development Board has revealed that a growing consumer demand for desiccated coconut powder could be developed in the country by resorting to organized market promotion activities for the popularization of the product in consumer packs for household uses. The survey has also shown that desiccated coconut powder in consumer packs is acceptable not only in non-coconut producing states but also in traditional coconut growing states such as Kerala. From the survey it was revealed that a sizeable section of the middle class and upper class families residing in cities and towns in Kerala would prefer desiccated coconut powder, if readily available, to raw nuts.

Health Benefits of Desiccated Coconut

Desiccated coconut is rich in healthy saturated fats with no cholesterol and is also a good source of dietary fiber. Lauric acid, the medium chain fatty acid from the fat of the coconut, is having antiviral, antibacterial, and antiprotozoal properties. Capric acid, another of coconut's fatty acid is also found to have antimicrobial properties. These fatty acids are found in the largest amounts in coconut. Also, recently published research has shown that natural coconut fat in the diet leads to a normalization of body lipids, protects against alcohol damage to the liver, and improves the immune system of body.

Coconut contains dietary fiber which passes through the digestive tract without being broken down or absorbed and is passed out of the body. Instead of contributing to health problems like starch and sugar, fiber promotes good health. Coconut is a natural low - carb, high - fiber food ideally suited for low carbohydrate diets. Coconut flour has been found in several studies to have a glycemic lowering effect, because coconut meat has simple carbohydrate content coupled with a high fiber, it yields a flour that is less disruptive to blood sugar

levels. It is vegan and gluten free.

Food Safety Standards for Desiccated Coconut

As per FSSAI standards, Grated Desiccated Coconut means the product obtained by peeling, milling and drying the kernel of coconut (*Cocos nucifera*). The product may be in the form of thin flakes, chips or shreds. The product shall be white in colour, free from foreign matter, insects, mould and rodent contamination. The product shall have pleasant taste and flavour, free from rancidity and any evidence of fermentation.

The product shall conform to the following requirements as per the food safety and standards regulations, 2011:

| | |
|---|-------------------------------|
| (i) Extraneous Vegetable matter | Not more than 15 units/100 gm |
| (ii) Moisture (m/m) | Not more than 3.0 percent |
| (iii) Total Ash (m/m) | Not more than 2.5 percent |
| (iv) Oil Content (m/m) | Not less than 55.0 percent |
| (v) Acidity of extracted fat pressed as Lauric Acid (m/m) | Not more than 0.3 percent |
| (vi) Sulphur Dioxide | Not more than 50.0 mg/kg |

List of Food Additives

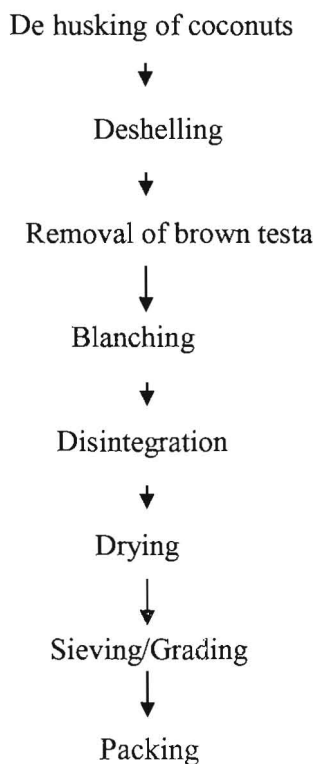
| Sl.No | Permissible Food Additive | Limit |
|-------|---|-----------------|
| 1 | Sulphur dioxide, Sodium/ Potassium/ Calcium Sulphite/ Bisulphate/ Metasulphite expressed as SO ₂ | 50mg/kg maximum |

Microbiological Requirements

| Sl.No | Parameter | Limit |
|-------|-------------------|-----------------------------|
| 1 | Total Plate Count | Not more than 40,000 per gm |

Manufacturing Process

It is simple and well-established. Fully grown and matured coconuts of around 1 year are stored with husk for about a month to facilitate absorption of water and separation of coconut kernels from shell walls. After de-husking, shells are removed and brown portion (also known as Testa) is removed by scrapping it off and in this process around 12-15% of the kernel goes as paring which is further processed to obtain oil, and thus there is a ready market for this by-product. Subsequently, deshelled coconuts are broken into pieces, washed and disintegrated in powder form. This powder is then dried in tray drier at about 80 -90°C and powder is stirred occasionally to ensure uniform drying. On cooling, it is passed through vibratory screen with different mesh sizes to segregate the powder according to mesh size. Finally, it is packed in moisture and oil-proof polythene-lined plywood boxes of 10, 25 or 50 kgs and even in retail packets of 200 / 400g. Recovery of desiccated coconut largely depends upon quality of coconuts. But on an average processing of 100 coconuts gives around 10 kg of coconut powder. By-products like parings and shell can be sold in the market. The process flow chart is as under:



According to IS 966:1999, DC is produced by a mechanical process of disintegrating, cleaned and dried pieces of pared kernel of fully matured and fresh coconut.

The product should be natural white in color. It shall have characteristic taste, odor and flavor. It shall be free from cheesy, smoky, musty or any other objectionable odors, fungus and insect infestation. It shall be crisp, free from rancidity and does not show fat sweating. DC is categorized into three types based on the particle size and are as follows:

- **Fine** – if size of particle is between 1.40mm and 1.00 mm or if it is retained on 1.00mm IS test sieve.
- **Medium**- If size of particle is between 1.70 mm and 1.40 mm or if it is retained on 1.40 mm iS sieve.
- **Coarse** – If size of particle is more than 1.70 mm or if it passes through 1.70 mm IS test sieve.

Yield of the product is 1 tone from 10,000 coconuts.

| Composition of the Product | | |
|----------------------------|--------------|----------|
| Sl. No | Item | Quantity |
| 1 | Moisture | 1.3-2.5% |
| 2 | Protein | 6.0-6.6% |
| 3 | Oil | 68-72% |
| 4 | Carbohydrate | 18-20% |
| 5 | Crude fibre | 4-6% |

Source* - Tropical Foods, Chemistry and Nutrition, Volume 2, George E Inglett

Low fat Desiccated Coconut

Desiccated coconut is of two types: High fat and low fat. High fat means the desiccated coconut powder produced without removal of coconut milk. Low fat desiccated coconut powder is produced as the byproduct of coconut milk/VCO/ DC units and is having a fat percentage upto 38-40%. It is a good source of dietary fiber. Low fat DC is used for the manufacturing of coconut flour and dietary fiber.

Export Potential of Desiccated Coconut

Desiccated coconut is gaining more export value nowadays. During the year 2014-15 and 2015-16, the quantity of DC exported from India was 2606.34 MT and 4260.97 MT amounting to Rs.42.42 crores and Rs.52.60 crores respectively. The export during the month of April 2016 was 1208.35 MT which is 279.67% more than the export of desiccated coconut in April 2015. This steep increase in the export shows the immense export potential of this sector. The major export destinations of desiccated coconut are Iran, UAE, Saudi Arabia, Qatar, Oman, Kuwait, Spain and US.

Export Promotion Activities

Government of India has provided promotional measures to boost India's exports under Foreign Trade Policy 2015-20. Entrepreneurs are entitled to receive the following incentives for exporting of coconut products:

(1) Merchandise Exports from India Scheme (MEIS)

Under the MEIS scheme, the Government of India provides incentive for exporting notified goods/products to notified markets. The rate of benefit ranges from 2-5% of the realized FOB value of exports.

(2) Duty Drawback Scheme

Duty Drawback has been one of the popular and principal methods of encouraging export. It is a method of refund of custom duties paid on the inputs or raw materials and service tax paid on the input services used in the manufacture of export goods. The duty drawback benefit are as stated in the table below.



| Benefits secured under MEIS (Merchandise Exports From India Scheme) and Duty Drawback Scheme | | | | |
|--|--------------------|--|---|---|
| ITC HS Code | Products | MEIS benefits in percentage of FOB Value | Duty Drawback Scheme benefit in percentage of FOB Value | |
| | | | Drawback rate when cenvat facility has not been availed | Drawback rate when cenvat facility has been availed |
| 8011100 | Desiccated coconut | 5 | 1 | 0.15 |

| Capital Investment | | |
|------------------------|-------------------------|-------------------------|
| Components | Capacity | |
| | 15,000 coconuts per day | 25,000 coconuts per day |
| (Rs. in lakhs) | | |
| Land (min 50 cent) | Own/Leased | Own/leased |
| Building & Civil Works | 35.00 | 45.00 |
| Plant & machinery | 67.00 | 87.00 |
| ETP | 5.00 | 5.00 |
| Electrification | 4.00 | 5.00 |
| Generator | 10.00 | 10.00 |
| Pre-operative expenses | 0.67 | 0.87 |
| Working capital margin | 8.00 | 13.00 |
| Total | 129.00 | 165.87 |

| List of Plant and Machinery | |
|-----------------------------|--|
| Sl.No | Item |
| 1 | Coconut de shelling machine |
| 2 | Brown skin removing machine |
| 3 | Washing Unit |
| 4 | Whole nut inspection conveyor |
| 5 | Disintegration Unit |
| 6 | Blanching Unit |
| 7 | Dryer with pre drying circuit and dust collection system |
| 8 | DC powder cooler |
| 9 | Lump breaker |
| 10 | Vibro sieve |
| 11 | Intermediate Conveyors |

CDB Scheme for Promotion of Coconut Industries

Coconut Development Board under Technology Mission on Coconut extends financial assistance to the limit of 25% of the eligible project cost limited to Rs. 50 lakhs per project. Under this scheme, CDB has supported 91 desiccated coconut powder manufacturing



units with a processing capacity of 909.45 million nuts per year which comes to 38% of the total coconuts used for processing in India (2001-2015).

For technical enquiries and for availing subsidy, contact : cdbtech@gmail.com.

For export related enquiries, contact : epccdb@gmail.com. ■