

# COCONUT CHIPS

## A NEW COCONUT KERNEL BASED PRODUCT

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### Introduction

The coconut palm has characteristics as a regular and consistent food supplier to mankind throughout the year which no other tree crop could be said to possess. The fresh kernel of ripe coconut constitutes an

whole nut or as partially dehusked nut to the uncultivated regions. The transportation of whole coconut is bulky and need more space.

Desiccation of kernel, germination, damages due to stress crack development and the

ready-to-eat and can be used as snacks. After rehydration, they could also be used at any time just like fresh kernel.

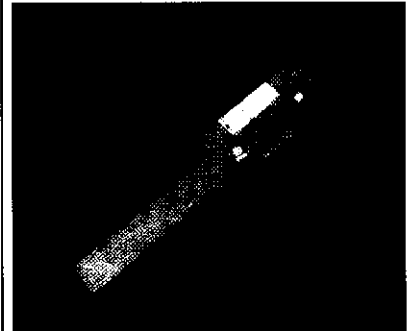
Fruits and vegetables artificially dried by the use of conventional tray dryers are wholesome, nutritious and palatable. But

Fat	: 60 - 65 %
Protein	: 6 - 7 %
Carbohydrates	: 12 - 15
Crude fibre	: 3 - 4 %
Ash	: 2 - 3 %
Sugar	: 10 - 15 %
Energy value	: 10 cal/g

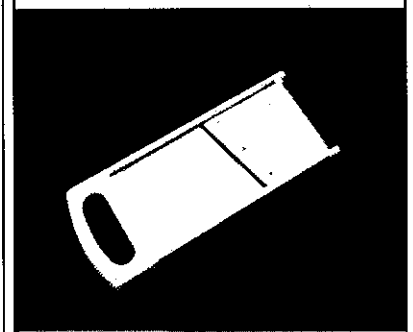
essential ingredient in the recipes of diverse food preparations in households as well as in food industries of different countries. Fresh kernel is used extensively in the form of grated, milk and ground paste. There is no loss of nutrients in the kernel and no wastage of kernel when used as grated or ground paste in the food preparation.

Since coconut is not grown in all places it is transported to the as

high cost of transport are the major disadvantages of transporting and/or storing whole or partially husked coconut. This can be overcome by preparing the dehydrated coconut chips of intermediate moisture coconut kernel. Intermediate moisture coconut kernel is the mature coconut kernel after removing the moisture content of the kernel partially by osmotic dehydration by using various osmotic media. The dehydrated coconut chips are



Testa remover



Hand operated slicer



Separating kernel and shell using shell remover



Removing testa from Coconut kernel



Slicing the Coconut kernel after removing the testa

those products have not gained popular acceptance, as they have less flavour, colour and texture of the original material even after rehydration. Freeze drying of fruits and vegetables results in good quality of dried material with long storage stability but the cost of processing is very high. Hence a new method of drying on the basis of osmosis, in which partial dehydration of fruit either whole or in sliced form is brought about by dipping them in sugar solution followed by hot air drying. This method of drying results in the better flavor products, less cost of products than the freeze dried method. Utilizing this technology, a process has been developed for producing the sweet coconut chips by osmotic dehydration followed by hot air drying.

**Process for the production of the sweet coconut chips**

Fresh kernel of matured coconut containing reasonable amount of water is to be used for this process.

Important steps involved in the production of the sweet coconut chips are as following:

**Removal of shell**

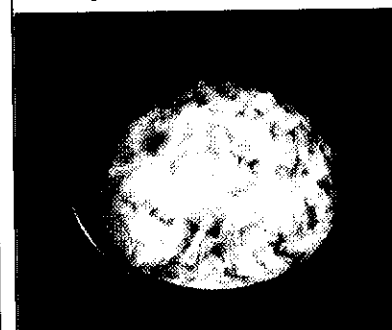
By using a special type of tool, remove the shell without breaking the coconut kernel, which helps for easy removal of the testa. The shell can also be removed after breaking the coconut into halves and then scoop out the kernel pieces by knife. But it will increase the time for removing the testa.

**Removal of testa**

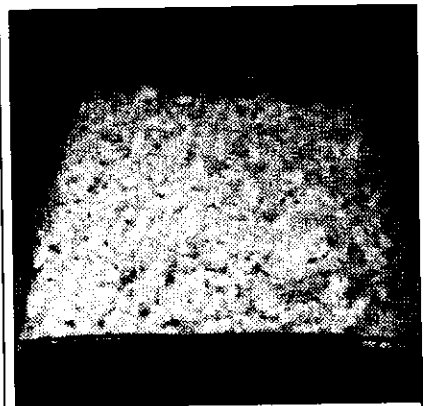
Remove the testa of the coconut kernel by using peeler. Care should be taken to peel the testa only with out affecting the white kernel.



Washing sliced coconut chips with water



Dipping coconut chips in sugar solution



Coconut Chips ready for drying



Coconut Chips dryer

**Cutting into pieces**

Cut the white kernel into pieces of triangular shape of about three inch size so that the pieces can be hold in the hand for easy slicing of the kernel.

**Slicing of the kernel**

The thickness of the slice should be very thin and it should not be exceeded 0.75 mm. Slicing should be done in such a way that the slices should fall directly into water.

**Blanching**

Thoroughly washed coconut slices are put in the muslin cloth and then dip the slices in hot water.



Packing of Coconut chips in packet



Coconut chips ready for marketing

### Osmotic dehydration

After blanching of the slices, put the slices in the osmotic medium for osmotic dehydration. For the small scale industry, agitation of the syrup during osmotic dehydration is not required. For the large scale industry, agitation of the syrup during osmotic dehydration is required

### Drying of slices

After osmotic dehydration of slices, drain of the osmotic medium. Then it is dried in forced hot air electrical dryer.

### Packaging of chips

The sweet coconut chips is hygroscopic in nature. If the relative humidity is more than 75 percent, it will absorb moisture and lose its

crispness. Hence, the chips must be packed in the metallised poly film or aluminium foil laminated with LDPE film pouches, which will maintain its flavour and crispness upto six months period without affecting its microbial and biochemical qualities. To avoid the breakage of the chips during transportation, it may be packed as pillow packet by using gases like nitrogen or carbon dioxide.

Drying of osmotically dehydrated slices in microwave oven:

Osmotically dehydrated coconut slices can be dried in the microwave oven. The crispness of the chips is very good when compared with that obtained by drying in the hot air oven.

### Reuse of soak solution

The strength of the osmotic medium will decrease after the completion of the osmotic dehydration of the slices, which can be reused by adding the necessary ingredients. After repeated use of the medium, it can be concentrated by heating the syrup in water jacketed vessel like milk cooker, steam jacketed vessel or vacuum jacketed vessel for about one hour at 90°C. By any of these methods, the off-flavour of the osmotic medium, developed during the osmotic dehydration, can be eliminated.

### Use of sweet coconut chips

The sweet coconut chips is crispy in nature and ready-to-eat form. No frying is required before the consumption. It is having its own good coconut flavour as no oil is used for frying. It can be used as snacks. After rehydration of the chips, it can also be used as fresh kernel. Rehydration of the chips may be done by soaking the chips in hot water of about 50°C for about 30 minutes. The rehydration character of the chips is better than that of the desiccated coconut powder.

The cost of chips dryer is Rs. 64000/- (US\$1,455) and the dryer capacity is about 500 nuts per day. Cost of producing one kg of chips will be about Rs. 80/-. Different types of chips like sweet, masala, medicated, sweet chips with different flavours, etc. could be manufactured.

The technology know how may be obtained from the Director, CPCRI, Kasaragod – 671 124, Kerala by paying Rs. 1000/- by cash or DD drawn in favour of 'ICAR unit' payable at Kasaragod or by cash in person. This fee includes one day training for 3 persons.

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