

# SNOW BALL TENDER NUT A NUTRITIVE DRINK AND SNACK

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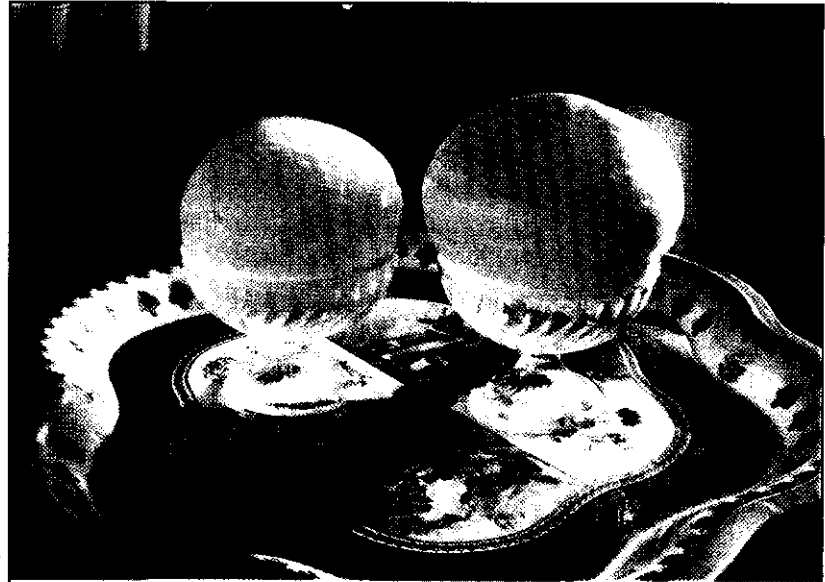
## Introduction

Coconut is probably the only tropical crop commercially cultivated extensively in about 86 countries especially on the small and marginal holdings. In all the coconut growing countries, a portion of coconut is harvested at tender stage (5 to 8 months) for using the tender coconut water as beverage. In India alone, it is estimated that nearly 11 per cent of the production of coconut are harvested and consumed in the tender stage mainly in cities and tourist places.

## Naturally sterile health drink and food

In India, travel and tourism has assumed much importance. Availability of safe drinks in public places and tourist spots has therefore become a necessity. Soft drinks manufactured by MNCs have flooded the market. However, there is a greater awareness among the public about the wholesomeness of natural foods. Preparation of fresh fruit juices is time consuming and cumbersome.

Tender coconuts are valued both for sweet water, which is a refreshing drink, its gelatinous kernel is a delicious food. Moreover, the tender coconut water has a number of medicinal properties and it is an essential component in many of the ayurvedic preparations. The use of tender coconut water is



Snow Ball Tender Nut

recommended in cases of gastro-enteritis and as a useful substitute to saline glucose in intravenous infusion. It is also prescribed in serious case of diarrhoea and vomiting against dehydration of body tissues. It increases the blood circulation in the kidneys and causes profuse diuresis.

## Nutrition value

The tender coconut water has a calorific value of 17.4 per 100 g of water. The following is the composition of tender coconut water; water (95.4 per cent), protein (0.1 per cent), fat (<0.1 per cent), mineral matter (0.4 per cent), carbohydrates (4.0 per cent), calcium (0.02 per cent), phosphorous (<0.01 per cent) and iron (0.5 mg/100 g). The percentage of arginine, alanine, cystine and serine in the protein are higher in tender nut water than those in the cow's milk. The

pH of tender water varies from 4.8 to 5.3 and the water contains both ascorbic acid (vitamin C) and vitamin B group. The tender nut water also contains various minerals of which potash is the major constituent.

The tender coconut kernel is good for convalescing patients. It contains good amount of nutrients. The soft tender kernel or solid endosperm of tender coconut is a delicious dessert. But the traditional method of its extraction is difficult, time consuming, and risky. The kernel of the tender coconut is sometimes eaten or else thrown away, as it is difficult to remove it from the shell.

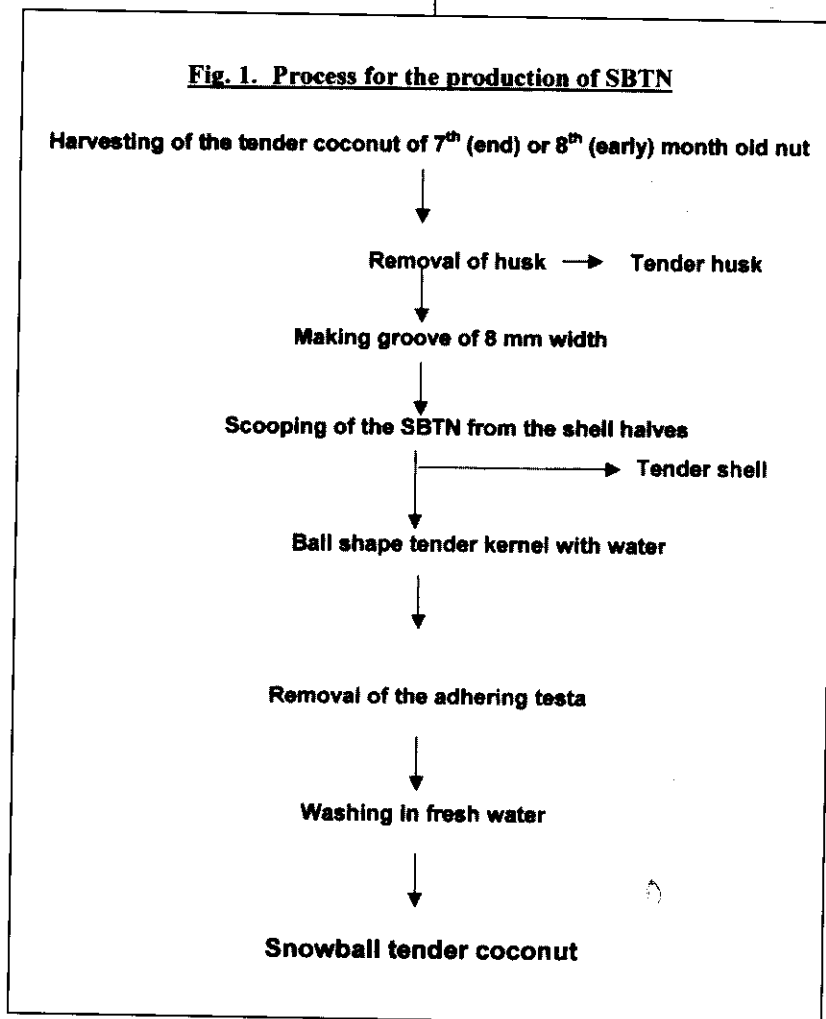
## Snow ball tender nut

Technologies were developed by various institutes for canning of tender coconut kernel and bottling/canning/ packing of

tender nut water which increase the cost of the tender coconut

Two types of machines have been developed for making snow

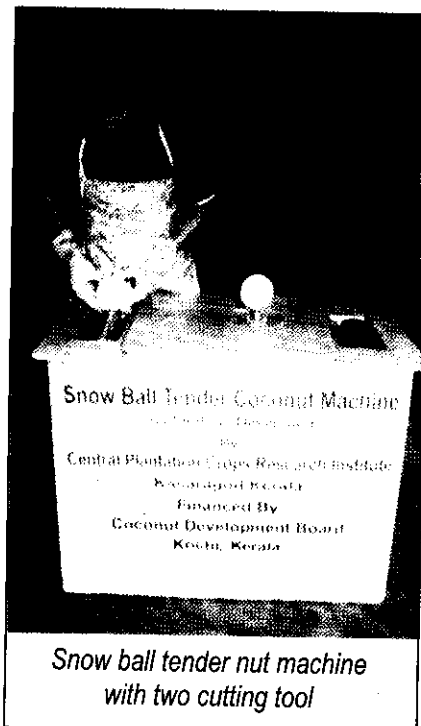
**Fig. 1. Process for the production of SBTN**

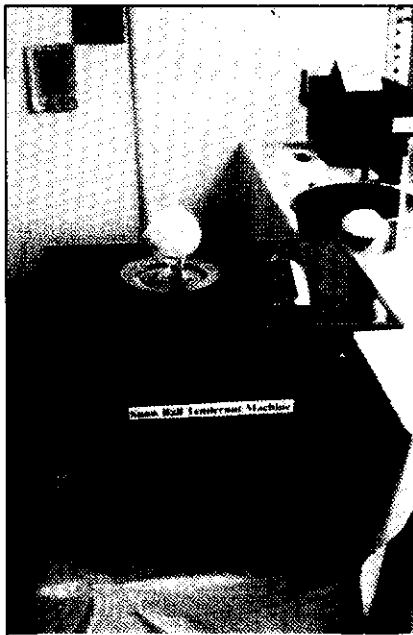


machine, any unskilled person can make a SBTN in 5 minutes, which could be brought down to 3 minutes by practice. The prime mover for these two blades will be from a 1hp/ 0.5 hp –2880 rpm, motor. Wood cutting tool of 8” diameter with 10 or 12 numbers of cutting teeth with 8 or 10 mm width, is provided as best cutting tool. For the selected cutting tool, the rpm of the main shaft has been optimized as 4000 rpm. For adjusting the depth of cut in the shell, arrangements were also given. A scooping tool has been developed for scooping out the white globular tender kernel from the shell. The scooping tool has to be inserted in between the kernel and shell through the groove and the nut is rotated for to and fro motion which loosens the bond between the shell and the kernel, there by separating both. The process for making SNBT is given in Fig.1. By using the snow ball machine, any unskilled person can make a

water as well as tender coconut kernel. It is possible to supply the tender coconut water along with tender coconut kernel without any waste material being thrown away after consumption. The husk, shell and testa of the tender coconut of 7-8 months can be removed with out breakage of nut and made available for consumption being named as snow ball tender nut. Snow ball tender nut is a tender coconut without husk, shell and testa which is ball shaped and white in colour.

ball tender nut. One machine which is developed is fitted with a 1 hp motor where in two people can work simultaneously. A smaller version of the same machine with 0.5 hp motor has been developed which has only one cutting tool. The machines developed are shown in Plate 1&2. In this process coconut of 7-8 month maturity is more suitable for making snow ball tender coconut. Making groove in the shell before scooping out the tender kernel with water from the shell is the one of the important unit operation, while making the SBTN. By using this





Snow ball tender nut machine with single cutting tool

SBTN in 5 minutes, which could be brought down to 2 minutes by practice. The approximate cost of the machine fitted with two

cutting tool is Rs. 24000/- where as the one fitted with 0.5 hp and one cutting tool is Rs. 7500.00. Cost of making one snow ball is approximately Re. 0.50/-

SBTN should be stored at constant temperature and variation of temperature should be avoided. For packing and transporting the SBTN, a plastic crate of 500 (L) x 325 (B) x 150 (H) mm (19 lit.) size with lid and with the crate partition has been and tested for its suitability for the transportation of the SBTN and found to be very useful. The capacity of each tray has been optimised as 15 snow ball /box.

#### Commercial Value

Snow ball is a nutritive drink and a snack at the same time. It is white in colour and ready-to-

serve form. This white ball will contain tender coconut water, which can be consumed by just inserting a straw through the top white tender coconut kernel. The coconut water is not exposed to the atmosphere, it is natural sterile water. There is no refuse after the consumption; there is no scope for littering of the premises. The snow ball tender nut can be individually packaged and refrigerated under hygienic conditions; the shelf-life of this product can be prolonged to more than 10 days. It can be produced in one place and marketed through different outlets like coolbar, hotel, etc.

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