

Value Added Food Products from Palmyrah Palm (*Borassus Flabellifer L*)

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Abstract

India stands first in the world in terms of its wealth of palmyrah palms with a population estimated to nearly 122 million palms. Palmyrah palm has great economic potential and every part of the palm is useful in one way or the other. The edible palm products such as Neera, Palm Jaggery, Palm Sugar, Palm Candy, Palm Chocolate, Nungu, Fruit, tuber etc. are rich vitamin and minerals, but products are not commercialised as lack of the value addition.

Keywords: Health; Palm; Food; Pamyrah; Palm jaggery

Introduction

The Palmyrah is a tropical palm tree that grows indigenously in India, Sri Lanka, Malaysia, The Philippines, Indonesia and many parts of East Africa. It is prominent in the south Indian state of Tamil Nadu where it was proclaimed the state tree in 1978, but can also be found throughout India in Kerala, Andhra Pradesh, Orissa, Bengal, Bihar and along the entire west coast. It is easily cultivated and also found to grow wild. Cultivation requires little labour in planting the nuts and protecting them from cattle till they grow above reach. The growth of tree is very slow and it takes from 15 to 30 years to bear. The palmyrah palm is a large tree growing up to 30m high and the trunk may have a circumference of over 1.5 meters at the base. The trunk is black in colour and looks like cylinders. It is also corrugated by the semicircular scars of fallen leaves. The tree can be easily recognized by its gigantic fan shaped leaves. There may be 25-40 fresh leaves and they are leathery, gray green, fan-shaped, 1-3 meters wide and folded along the midrib and they spring at the top in a clump. They are usually very tough and have thick stalks. There are two kinds of the palmyrah – the male and the female. The male and female flowers are held by two different trees, never in one. Both male and female trees produce spikes of flowers but only the female plant bears fruits. However both trees are used for tap toddy. The flowers are small and appear in densely clustered spikes, developing into large, brown, roundish fruits. The male flowers are smaller than the female flowers. India nearly 122 million palms and Tamilnadu contributes first place and followed by Andhra Pradesh [1,2]. Though growing of this important palm has an immense potential, no determined effort has been made to bring the palm under cultivation. Palmyrah referred as tree of life with nearly 800 uses including food, beverage, fiber, fodder, medicinal and timber. Among the various edible uses of the palm, the sweet sap tapped from the inflorescence for making palm sugar is of prime importance. The endosperm of the young fruit, like tender coconut, is a delicacy in summer. The petiole fiber and leaf blade are used to make products such as brushes and handicrafts. The tree serves as a source of raw material for several cottage industries [3].

Neera

Neera the delicious drink extracted from the sap of the palm is fast becoming popular in rural and urban areas of India. Refreshing as it is, the drink has agreeable flavor, high nutritive value and medicinal properties. It is whole some, cool and good for improvement of general health, especially as a supplement to those who have iron and vitamin deficiency. The popularity of system cool and improves appetite and digestion. It can be consumed in fairly large quantity without causing any to the system. As a good tonic to the asthmatic, anemic and leprosy patient, Neera has acted miraculously. It has also cured digestive troubles. It can also be used for preparation “GUR” syrup, rab, Palm Sugar, Palm Candy, and other Confectionery items, ice cream, various sweets. Sap tapped from palmyrah tree known as neera is transparent, pleasant smelling and sweet. It has medicinal value, as stimulant and anti phegmatic. It is also useful in inflammatory infections and dropsy. It forms a part of the daily diet of villages where it is grown.

Neera is not only sweet and delicious, but also has nutrient and mineral, which prove to be a good supplement to diet in India [1].

Toddy

Toddy is formed as a result of fermentation of sugar sap by wild yeasts and bacteria, which come into contact with the sap. This is an uncontrolled natural fermentation by number of different strains of yeast and bacteria. The alcohol content in fully fermented toddy is around 5 %. But fermentation of palmyrah sap using pure yeast cultures gives about 7.8% alcohol content under laboratory conditions. The major sugar present in partly fermented toddy is sucrose, glucose and fructose but these all are gradually converted to ethyl alcohol during fermentation.

Palmyrah arrack

Arrack is manufactured from toddy by pot still distillation and patent still distillation. The approximate recovery of potable alcohol from toddy is 10%.

Wine

Sterilized unfermented sap could be fermented with suitable strains of yeast to produce palmyrah wine. Sweet toddy, with a pH of 6-7, sterilized and inoculated with good wine yeast produce a very clear straw coloured wine. The alcohol strength increases by adding extra sugar to the sap. The wine prepared in this manner is a pleasant drink without characteristic toddy flavour and sour taste of the acids present in toddy.

Palm jaggery

It is also called as palm gur. Jaggery is made by boiling neera in a galvanized iron pan at 110°C. Neera gets transformed into a viscous fluid which is poured into shells and allowed to harden. About 8 liters of neera is required to get 1 kg of jaggery. Palm jaggery is almost like jaggery that is made out of sugar cane juice. It is highly priced due to its medicinal properties. It has an intense, earthy taste or reminiscent of chocolates in its taste [4]. The palm jaggery obtained after processing is darker and richer in colour. It is slightly salty to taste but much healthier of the two. Due to its cooling effects over the human body, it is of high value. It does not have the bone meal content which is used for whitening processed sugar. The price of the palm jaggery is double that of sugar. Neera converted into a solid or a semisolid crystalline mass ready for direct consumption is called Palm Jaggery. Jaggery is a solid mixture of reducing and non-reducing sugars prepared by concentration of palmyrah sap, except for small changes undergone during its manufacturing. It contains all constituents of neera and is equally nutritious. The proximate composition of jaggery is moisture (8.97%), ash (3.25%), reducing sugar (3.41%), and total sugars (73.87%). Protein (1.41%) and organic matter (11.1%). Palmyrah jaggery processing adequate amounts of Ca, low sodium and high potassium is prescribed for dispensing in conditions like hypertension and oedema due to heart and liver diseases. It is recommended for the treatment of diseases with marked loss of potassium as the case of diabetic acidosis, post-operative convalescence and as a general diuretic. The iron content varies from 5 – 10 mg/100g palm gur. This can profitably be used to cure anemia. Jaggery contains very little amount of nitrogen. With regard to carbohydrates, it contains higher amount of non-reducing sugars than reducing sugars. The higher amounts of sucrose and glucose justify the recommended use of palm gur as a good energy source for convalescents, since in the stage one requires readily available energy providing food. It contains vitamins like B₁₂ and C.

Palm sugar

With sucrose content 12%w/w and purity of about 80% the sap forms a suitable material for production of sugar. Palm sugar can be substituted to cane sugar in all preparations. It has high dietetic values and healing properties against disease of the eye. It contains Protein (0.24%), fat (0.37%), minerals(0.5%), carbohydrate(98.89%), calcium(0.08%), Phosphorus(0.06%), iron(30 mg/100g), nicotinic acid(4.02 mg/100g) and riboflavin(229 mg/100g) with calorific value of 398 K calories/100g.

Palm candy

Neera free from debris boiled in an alloy vessel adding small quantity of superphosphate. After uniform boiling the liquid is allowed to cool. After removal of sediments it is heated to 110°C for 2 hours until it reaches honey like consistency. The fluid is then allowed to cool and poured into a crystallizer. Sugar crystals start forming after 45-60 days.

Palm honey

Neera is heated for 2 hours to obtain honey like consistency. The syrup then is transferred to mud pots. Ripe, dry and shelled tamarind fruits devoid of seeds are added to the syrup. About 1 Kg of fruit is required for adding to 10 liters of syrup. The pot is closed tightly with cloth and vessels are kept in a shock proof, cool and dry place for 130-180 days. Sugar crystallises on the sutures of tamarind and the fruits become delicious [2].

Palm cola

Palm cola is an aerated soft drink containing 11% sugar. Its other ingredients are cola concentrate, citric acid and food color. The palm sugar is treated with milk and its impurities are removed while boiling to a temperature of 110°C-115°C. The boiling is stopped at 53Brix and the mixture is filtered through a filter press. Cola essence is added to the mixture after cooling at the rate of

250ml/1000bottles of palm cola. Bottles of 200 ml, previously sterilized are filled with the mixture at the rate of one fluid/bottle. This is carbonated with carbon dioxide and sterilized water. About 1kg of purified palm sugar is sufficient to produce 300 bottles of palm cola.

Confectionary

Presently made of its sugar is chocolates and ginger toffee. A mixture of glucose and palm sugar is boiled to a temperature of 120°C. The heated mixture is put into trays and mixed with powdered citric acid. A mixture of colour and essence is then added. The entire mixture is mixed well and cut into slabs, allowed to cool and packed.

Tender fruit

Nungu, the soft jelly like endosperm obtained from the tender fruit of palmyrah is highly perishable and seasonal. However, nungu can be processed and preserved as value added products.

Palmyrah fruit

Palmyrah fruit pulp could be commercially utilized to produce food items and animal feed. The whole fruit contains about 40% of undiluted pulp which is dark yellow in colour with its characteristics flavour and bitterness. Palmyrah pulp is mixed with other fruits for making jam, cordial, cream etc. since its pulp is bitter in taste, it is better to prepare mixed fruit jam rather than palmyrah jam separately.

Cordials

To prepare cordials, citric acid is added to its diluted pulp and boiled. Well boiled cordial is bottled in white or amber coloured bottles after adding approved food preservative. Sometimes a stabilizer is also added to prevent separation of layers after bottling.

Under Khadi Village Industries Commission (KVIC) the following training centers are giving training for unemployed youth for self-employment.

1. Dr. Director-Principal, Gajanan Naik Multi-Disciplinary Training Center, KVIC, At. Post. Dahanu Dist. Thane-401601 (Phone No. 02528-222241)
2. Dr. Director-Principal, Central Palmgur & Palm Products Institute, KVIC, Kumarappapuram, M.M.C. Post, Chennai -600051. (Phone no. 044-25555402)
3. Dr. B.R. Ambedkar Institute of Rural Technology and Management, KVIC, Post Trimbak Vidhya Mandir, Nasik-422213.

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3. Palm Development Exhibition.
4. www.kvic-regppmegp.in

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