

Medicinal and nutritional values of banana cv. NENDRAN

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ABSTRACT

There are many varieties of banana cultivated in the Agasthiamalai ranges. Nendran ranks first in the commercial value. Four clones of Nendran recorded in the Agasthiamalai range. Medicinally inflorescence axis of Nendran is a good lithontryptic; its fruit is laxative and the flower is for mensural disorder. Fruit pulp contains vitamins B₁, B₂, B₃, vitamin C, amino acids, iron, calcium phosphorus and proteins in substantial amount which are the daily need diet for human beings

Key words : Banana cv. NENDRAN, Medicinal value, Nutritional value

The word “banana” is a general term embracing a number of species or hybrids in the genus *Musa* of the family Musaceae. Bananas are cultivated commercially under tropical and subtropical conditions in all the states of India, except in those having extreme winter such as Himachal Pradesh and Jammu and Kashmir. In Tamil Nadu, bananas are cultivated in about 88,100 hectares and the total production is estimated to 4406000 tonnes (Anonymous, 2003). India is the leader in banana production and exported nearly 940 metric tonnes of banana in the year (2007). In India, more than 600 varieties are known, but often many of the varieties carry a lot of synonyms. The Tamil Nadu Agricultural University recorded 115 varieties.

The ripe banana is utilized in a multitude of ways in the human diet. The banana is of great nutritious value and it has a rich combination of energy value, tissue building elements, proteins, vitamins and minerals. It is a good source of calories, many other nutrients and enzymes. People of South India, traditionally use banana as a balanced and supplementary diet. Hence, it is a wonderful nutritious diet for easy digestion, which prevents diarrhoea and worm trouble (Prem Kumar and Khurdlya, 2002).

MATERIALS AND METHODS

Extensive field trips were conducted to the Agasthiamalai ranges. The four clones of Nendran were identified with help of the traditional cultivators of banana. Crop duration was recorded by the repeated visits to twenty fields sample. Weight of the bunch, number of hands per bunch and total number of fruits in a bunch were calculated from the mean of twenty samples. Traditional banana cultivators from Kanyakumari and Trivandrum districts were interviewed to know the commercial value and other details of the banana. Small

industries of Nendran chips producing units were visited. Traditional Sidha practitioners from various parts of Kanyakumari and Trivandrum districts were interviewed to know the medicinal value. For the estimation of different nutritions of the Nendran fruits, the biochemical methods of Sadasivam and Manikam (1992) were followed.

RESULTS AND DISCUSSION

The variety, Nendran ranks first in commercial value. The cultivators of the Agasthiamalai ranges call this variety “King of Banana”. The shelf-life of the fruits of Nendran is more, compared to that of others. So, the fruits of Nendran have been exported to the Arabian and European countries. In the Nendran group, four clones were identified namely, Nendran (Nattuyethan), Mysoreyethan, Chittyethan and Viraliyethan. Among these, the Chittyethan and Viraliyethan are neglected by the farmers because of their low commercial value. The size of the fruits is very small compared to Nendran and Mysoreyethan.

The duration of all the four crops is 11-12 months. The bunch weight of Nendran and Mysore nendran is 15-16 kgs whereas the Virali and Chittyethan have the bunch weight of 3-5 kgs. The Nendran and Mysoreyethan have 7-8 hands per bunch and each hand carries 12-14 fruits but Virali and Chittyethan have only 3-4 hands with 7-8 fruits per hand. The pulp of the fruit of Nendran and Mysoreyethan is pale yellow, whereas the Virali and Chittyethan pulp is yellowish orange.

Venugobal (2008) states that banana is mostly grown by small and marginal farmers either in homesteads or in well-drained rice fields. Nendran is the most popular commercial cultivar which is loved much by cultivators and has excellent fruit quality, sustained income and multiple uses ranging from being much valued for infants

and culinary purposes to diverse processed products.

Medicinal value of nendran :

Traditional Sidha practitioner Mr. Narayanan Assan, aged 82, who was interviewed for this study, stated that the inflorescence axis of the banana cv. NENDRAN is used for dissolving kidney stones. He further stated that the core stem after removing the leaf sheaths of Nendran is crushed and the juice is collected. If a person who is suffering from kidney stones, takes a glass of this juice in the early morning before breakfast, continuously for six months the stones formed in the kidney will be dissolved during this period.

Mr. Chellakkan Assan, aged 78, was interviewed for this study and he stated that the flowers of Nendran are cooked and mixed with curd and consumed in the early morning. It is an effective medicine for menstrual disorders like painful mensuration and excessive bleeding.

Oudhia (2003) in his article "Traditional knowledge about medicinal uses of banana" states that the juice of banana stem is a very good lithonryptic. According to him, the traditional healers of the Chhatisgarh state in India use banana stem to treat the persons suffering from kidney stones.

Morton (1992) has stated that traditionally banana is used as a balanced and supplementary diet for babies of four to ten months old. The fully matured banana is chosen for this preparation. After peeling, the banana fruit (Nendran), it is cut into thin, fine pieces and dried in the sun light, then ground well into fine powder. This powder is thickened by boiling with milk and one pinch of sugar, and is given to the babies. This is a wonderful nutritious diet for early digestion and it prevents diahorrea and worm trouble in babies.

Nendran has various uses. Banana chips is one among them, which is produced from the ripe banana pulp. The pulp is sliced into thin pieces and fried in the oil. There are so many small industries established in Kanyakumari and Trivandrum districts for the preparation of Nendran chips. One of the major producers of chips from Kanyakumari district Mr. Balachandran, was interviewed for this study. According to him, 250 tonnes of banana chips are exported to Western countries every month from Kanyakumari district alone.

Nutritional value of nendran fruit :

Bio-chemical analysis was carried out to estimate the important nutrients. This study reveals that the important food constituent, protein is enriched with 12.8 mg/g in the pulp of the banana cv. NENDRAN. Oguntona (2007) states that banana was considered as an important

Table 1 : Different nutrients found in banana cv. NENDRAN

Sr. No.	Nutrients	Amount in mg/gram
1.	Protein	12.80
2.	Carbohydrate	240
3.	Soluble sugar	86
4.	Fibre	8.2
5.	Ash	12.8
6.	Calcium	0.118
7.	Phosphorus	0.36
8.	Iron	0.015
9.	Thiamine	0.0028
10.	Riboflavin	0.0016
11.	Niacin	0.012
12.	Ascorbic acid	0.350
13.	Tryptophan	0.017
14.	Lysine	0.580
15.	Methionine	0.090

food to boost the health of malnourished children, because it contains a good proportion of protein and fibre.

The estimation revealed that the total carbohydrate and soluble sugar occupied the maximum proportion of 240 mg/g and 86 mg/g, respectively in the Nendran fruit. Swennen and Resales (1994) bananas are of great value both in constipation and diarrhoea as they normalize the bowl function in the large intestine due to the richness of pectin. The pectin possesses the ability to change the bacteria in the intestine from the harmful type of Bacilli to beneficiary acidophilic Bacilli.

Naturally the fruit pulp of banana is more nutritious and tasty because substantial quantities of dietary fibres are present in it. This study showed that 8.2 mg/g of fibre and an impressive amount of (12.8 mg/g) of ash were found in the pulp of Nendran. Kanazava and Sakakivara (2000) reported that bananas contained high amount fibre and they can help to restore normal bowl action and overcome the problems without resorting to laxatives.

Calcium and phosphorus are important nutrients, which are essential for the daily diet of human. Phosphorus combined with calcium is responsible for forming the structure of bone and teeth. This study indicates that the fruit pulp of Nendran contained 0.118 mg/g of calcium and 0.36 mg/g of phosphorus.

Iron is another mineral which is essential for the formation of certain enzymes. The dietary iron is of two forms haeme and non-haeme. While the haeme iron is derived from meat and fish and non-haeme iron is derived from tropical fruits. This study showed that 0.015 mg/g of iron is present in the fruit of Nendran. The deficiency of iron causes anaemia to human beings. Lili *et al.* (1988) stated that the iron can stimulate the production of

haemoglobin in the blood. Bananas are beneficial in the treatment of anaemia because they contain high amount of iron.

In the fruit pulp of Nendran, the water-soluble vitamins like thiamin (vit. B₁), riboflavin (vit. B₂), niacin (vit. B₃) and ascorbic acid (vit. C) are found in substantial amount. The bio-chemical analysis of this study reveals that the Nendran fruit consisted of 0.0028 mg/g of thiamin. It plays a vital role in the activities of various enzymes and is involved in the functioning of the nerves, muscles and heart. The deficiency of this vitamin 'B' causes the skin disease beri-beri. Saraswathy (2006), states that banana fruits have very special place among the tropical fruits, because they contain substantial amount of vitamins.

Compared to the other vitamins, this study showed that less amount of (0.0016 mg/g) riboflavin (vit. B₂) and somewhat more amount (0.012 mg/g) of niacin (vitamin B₃) were found in the Nendran fruit. Riboflavin is a water soluble vitamin, which exists in combined form as coenzymes and functions in the metabolism of carbohydrates and amino acids. Niacin (vitamin B₃) is found in the combined form as a coenzyme NAD and is essential for the growth and health of human body. The deficiency of riboflavin causes Pellagra disease (Rice *et al.*, 2002). It involves in the metabolism of carbohydrates, functioning of digestive system, main factor of sex hormones and maintenance of healthy skin. Sylvia Subapria and Chandrasekar (2006) state that niacin involves the metabolism of carbohydrates and oxidation of sugar.

Ascorbic acid (vit. C) was found maximum (0.350 mg/g) in Nendran fruit compared to the other vitamins. It is highly essential for collagen synthesis, wound healing and blood vessel maintenance. Someya *et al.* (2002) state that vitamin 'C' is combined in banana fruit in the form of ascorbic acid and it should be considered to be a good source of natural antioxidant and functional food source against cancer and heart diseases.

Important amino acids were traced in the Nendran fruit *viz.*, tryptophan, lysine and methionine. More amount of lysine (0.58 mg/g) was found compared to other amino acids. The Table 1 shows that 0.09 mg/g of methionine and 0.017 mg/g of tryptophan were found in Nendran fruit.

The tryptophan is a natural mood enhancer; it can reduce seasonal affective disorder. Evelin Mary *et al.* (2007) state that according to the survey undertaken in (2005) by an organization, MIND amongst people suffering from depression, many felt much better after eating banana. This is because banana contains the mood

enhancer tryptophan.

The amino acid lysine is essential for the growth of children. So, the traditional Sidha practitioners as well as allopathic doctors recommend Nendran fruit for the small babies. Methionine is one of the sulphur containing antimicrobial amino acids which is likely to inhibit a broad range of pathogenic bacteria. Mokbel and Hashinga (2005) state that the banana fruits contain antioxidants compounds such as methionin and dopamine. Hence bananas are potential source of antioxidant and antimicrobial activity.

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