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Arenga wightii Griff.—A unique source of starch and beverage for *Muthuvan* tribe of Idukki district, Kerala

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Arenga wightii Griff. is a palm seen along the slopes of western Ghats in Idukki district of Kerala state. *Muthuvan* tribal community living in Idukki district utilizes the plant for extraction of starch and palm vine. They have developed and standardized their own techniques for extraction of starch and palm vine. The starch extracted is used for the preparation of various dishes while palm vine is consumed directly without fermentation. The paper deals with the method of extraction of starch and palm vine and its usage.

Key words: *Arenga wightii*, Starch, Palm, *Muthuvan* tribe, Idukki district, Kerala

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Mutuvans tribes found in Idukki district are tall, strong, stout, energetic and active. Their dress is distinctly different from that of the other Travancore tribes. They are courteous, disciplined and well mannered like the *Todas* of Nilgiri hills. Many Anthropologists believe that *Muthuvans* are not the original inhabitants of western Ghats and that they are migrated from the nearby district of Madura in Tamilnadu. Since, they carry the Idol of their goddess, *Madura Meenakshi*, their children and the household articles on their back, they are known as *Muthuvans*. The word *Muthuku* both in Malayalam and Tamil denotes 'back of the body'. *Muthuvan* hamlets were located on foothills surrounded by dense forest. The structure of *Muthuvan* hamlet is quite characteristic in many aspects and comprises of 20-30 huts, 3-4.5 m apart from each other. The huts are built on raised mud platforms. They have rectangular shape and are usually 3.70×4.88×2.44 m in size or bigger. Wooden poles are used as pillars and the walls are built with bamboo mat or bamboo and other straight poles reinforced with mud. Bamboo leaves (*Ochlandra travancorica* Gamb.) and *Potha* grass – *Cymbopogon flexuous* (Stud.) Wats. are used for thatching. The huts usually have had one entrance and no windows. Within the hamlet, *Kani* is the formal head and has the power to regulate the activities in the hamlet. *Muthuvans* are shifting cultivators. Slash-and-burn method for ragi (*Eleucine coracana* Gaertn.) is widely adopted. As they wandered in the forest, they were familiar with even the most difficult terrains and were experts in identifying useful plants and minor forest products. They spend most of their time collecting honey, edible fruits, plant products, medicinal plants, wild tubers, mushrooms, bamboo and wood. Much time is spent for the construction and maintenance of huts. They were also experts in hunting and fishing. Ladies do not usually go out for work but after finishing their household work, they engage themselves in making baskets and mats using bamboo.

The *Muthuvans* of Idukki district collect and use a number of plant species available in the forest unknown to the common man as food. The *Muthuvans* extract starch from *Arenga wightii* Griff., *Caryota urens* L., *Curcuma zeodaria* Rosc., *Curcuma montana* Rosc., *Mangifera indica* L., *Phoenix humilis* Royl., *Musa paradisiaca* L. and prepare various dishes. Beverages are tapped from *Arenga wightii* Griff. and *Caryota urens* L. They have developed their own techniques for identifying and extracting palm starch and palm wine from *Arenga wightii* Griff. (Arecaceae).

Methodology

The ethnobotanical data for the present investigation are collected from Idukki district, Kerala state (Fig. 1). Idukki District lies approximately

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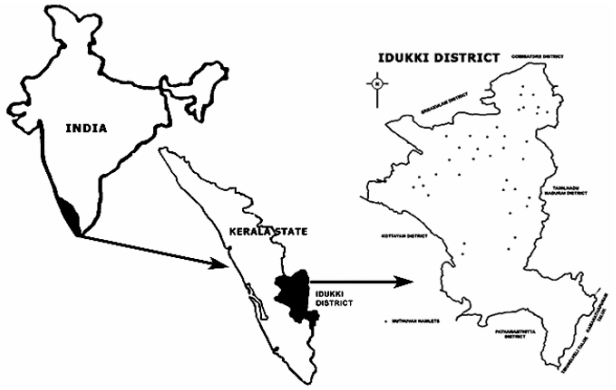

Fig.1 Location map of the study area

within 9. 20°-10. 20° North latitude and 76. 30°-77. 30° East longitudes. All the data are collected through repeated field visits to *Muthuvan* settlements and careful interaction with them. Semi-structured interviews, photographs, staying in the settlements, journey with these people through the forest and participating in various activities helped in recording these valuable ethnobotanical practices. The plants were identified with the help of informants, brought back to the settlements and confirmed by elders. Herbariums were prepared and confirmed with the help of authentically identified specimens of Calicut University Herbarium[1].

Results and discussion

Arenga wightii Griff. is a palm found mostly in the steep slops of western Ghats of Kerala. The plant is known among the tribals as *Azhapana* or *Ayyapana*. The starch is extracted from the cylindrical stem of the plant with an age ranging from 15–30 yrs. To check the availability of starch, a test cut is made at the base with a sharp knife and the exudation is examined. If the sap is concentrated they will confirm the presence of starch. Maximum starch is available in the pith before the formation of new inflorescence. The tree is cut down and sliced into convenient length. The hard outer sclerenchymatous hypodermis is carefully removed and the inner cortex is taken out, which looks like a cylinder (Fig. 2), which is again split into splinters of ten-inch length (Fig. 3). The splinters are hammered over the rock using wooden hammers (Fig. 4) resulting into separation of fiber and pith. This is then put in a vessel containing water, rubbed against the wall and pressed to release the starch. The pith and fiber is taken out in the shape of a ball and is squeezed through a cotton cloth tied to the mouth of the vessel (Fig. 5). The pith with fiber is again hammered to extract the left over starch. The brownish red solution thus obtained is allowed to settle. After an hour, water is decanted from the vessel. The settled starch is washed in water and filtered through cotton cloth to eliminate the impurities and allowed to sediment. The water is drained out and the remaining is crude starch, white in colour (Fig. 6), which is sun dried for 2-3 days and stored for future use. The extracted starch is used for the preparation of loose sticky pudding called *Kurukku.* The starch grains imbibe water and expand considerably. After cooling, it is taken with salt, sugar or other side dishes. The dry powder after slight wetting with water and some salt is filled in the bamboo internode, steamed and *Puttu*, a local dish is prepared. *Uppuma* is also prepared using *Arenga* starch. Use of *Caryota urens* L. pith as food by the tribals of Thane district of Maharashtra has also been reported[2]. The starch extraction from palms is a laborious work and is done with the participation of all the family members and sometimes as a joint venture of two or more families. 300-350 gm of dry starch is separated from 1 Kg of fresh pith of *Arenga wightii* Griff. Similar practices were observed in western Ghat region of Karnataka were starch from *Corypha umbraculifera* L. is extracted[3].

The *Muthuvan* tribe taps *Arenga wightii* Griff. available in the forest and consume large quantity of palm wine from August to April. Most of the toddy collected is consumed before fermentation and hence there is no alcohol content. During their routine journey in search of various forest products, they identify palms with unopened spadix located deep inside the forest. They will peg marks on it so that others will not claim the right and soon start working on the spadix after constructing a platform of convenient height. Sitting on this platform they will beat the spadix with a light but strong wooden hammer from top to bottom for nearly 20 min a day. This is done twice in a day and continued for seven days. On the eighth day, the sheath and the spikelets are removed using a sharp knife leaving the stalk of the spadix. Now, thin cross sections are sliced three times a day to ensure free flow of sap (Fig. 7). Then, a long bamboo (*Dendrocalamus strictus* Nees) internode is hanged below to collect the exudation (Figs. 8 & 9). The sap thus collected is consumed or given to the elders. The quantity of palm wine production varies from plant to plant. Expert *Muthuvan* tappers get on an average two liters palm

Fig.2 Cylindrical inner cortex

Fig.3 Making splinters

Fig.4 Hammering the pith

Fig.5 Squeezing pith and fiber

Fig.6 Crude starch

Fig.7 Stalck of the spadix

Fig.8 Fixing Bamboo internode on stalk of spadix

Fig.9 Collecting palm vine in Bamboo internode

wine from *Arenga wightii* Griff. One spike yields palm wine for a minimum period of twenty days. *Arenga* wine was found to be superior in sugar content, taste and flavour than *Caryota* wine. Nutritional value of palm wine from *Hyphaene coriacea* and *Phoenix reclinata* Jacq. (Arecaceae) consumed by the rural people in Maputland, Natal, South Africa has been reported to be an important source of Potassium, Magnesium, Nicotinic acid and vitamin C and protein[4]. Production and use of alcoholic drinks from *Phoenix sylvestris* Roxb. and *Phoenix dactylifera* Linn. by major tribal groups of Uttar Pradesh and use of toddy extracted from *Caryota urens* L. by *Konda Reddis* of East Godavari District have been reported[5,6]. Detailed studies are required to evaluate the nutritive value of non-fermented *Arenga* vine.

Conclusion

The present investigation has brought to light the methods used for extraction of starch and palm vine from *Arenga weightii* and preparation of various dishes using the starch. The starch and palm vine could be used as an alternate food and drink during famine period. These could also be utilized for the production of value added products such as palm jaggery, soft drinks and clean starch. Living deep inside the forest, *Muthuvans* have developed their own unique methods for extraction of starch and palm vine. It is the need of the hour to record and preserve such time tested valuable traditional practices before it is lost forever.

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