Socioeconomic and Traditional Medicament through Wild Date Palm in India

Saran PL 1*, Choudhary R 1 and Devi G 2

1 Indian Agricultural Research Institute Regional Station, India
2 Anand Agricultural University, India

Submission: February 06, 2018; Published: February 23, 2018

*Corresponding author: Saran PL, Indian Agricultural Research Institute Regional Station, Pusa, Samastipur, (Bihar)- 848 125, India, Email: plsdehradun@gmail.com

Abstract

Information and knowledge were collected for the first time through questionnaire and interviews on medicinal aspects of wild date palm. Wild date palm plant is useful in one way or another; from its sap to its fermented product like tari. Raw sap and tari manufacturing is the most profitable business for the small and marginal farmers of North Eastern Plains Zone (NEPZ) of India. This business was showed better B: C ratio (1.83) along with 77.35% recovery of Tari from sap. Raw sap and tari are used for treatment of several diseases like, anti-heat stroke activity, jaundice, eye flu, constipation, stomach problems, urinary complaint, weight gain, leucorrhoea, Mamarkha in children, recovery after pregnancy, power booster for bullocks, relief in menstrual cycle and let down of milk in women. Among different diseases, farmers put anti-heat stroke activity (mean score 52.56%) at rank I followed by jaundice (mean score 41.38%) at rank II and eye flu (mean score 38.30%) at rank III.

Keywords: Date palm; Diseases; Folk uses; Medicinal properties; Sap; Tari

Introduction

Indigenous knowledge has an important role in development of commercial products and sourcing of medical remedies. Wild date palm (Phoenix sylvestris Roxb), locally known as Khajur is one of the most common popular palms and a well-known source of sugar [1]. It grows in a wide belt from the desert areas of northern Africa, the Middle East and southern Asia especially Bangladesh and NEPZ of India providing food, ornament, material for shelter, fiber and fuel in a harsh environment [2]. Even it does not require sun to flourish as it has the great capability of thriving under shade [3]. Such versatility has given it an endurance to resist the negative influences which affect its economic development [4]. The palm family (Palmae, or more recently Arecaceae), with some 2200 species, is distributed throughout the tropics and subtropics [5]; representing an integral and important part of tropical forests [6]. All species belonging to the genus Phoenix grow vertically to form an unbranched trunk driven by the activity of a single terminal shoot apex. To support such elevated vertical growth, the root system is highly developed and reaches deep for water resources. Date palm leaves are very developed and can reach several square meters in area. The leaves are erect, arranged in a spiral pattern on the trunk. Sheathing becomes denser at the top of the tree forming a crown with hundreds of leaves forming a terminal rosette. The leaves are pinnate with needle-sharp tips to defend the plant from grazing animals and reduce water loss.

In India, Khajur palm is produced as a homestead crop; however, it grows naturally or is cultivated in fallow lands, around homesteads, farmland boundary and even in the marginal lands along the roads, canals and river. Sap has been used from time immemorial to produce traditional tari. Because of the extensive use of its sap in making sugar, it is of considerable importance for household economy in Bihar, Orisha, and West Bengal where cultivation of the palm for tapping is an age-old practice. The palm can be tapped regularly and year after year for long time with a small amount of investment for maintenance [7]. P. sylvestris is only seasonal sap producing tree. Besides the use of fresh fruits for human consumption, a number of by-products derived from dates also have various uses. These include sap and fermented beverage. Dali bard enlisted 30 different palm species that are traditionally tapped in parts of tropical world. P. sylvestris along with all other domesticated palms provides a wide array of commercial products for human kind and is often the main subsistence resource for the poorest people [8]. By tapping a sound Khajur palm for sap one can earn substantial amount of cash money annually [9], which appears important where about 70% people are living in the villages and depend mainly on agriculture and tree-based products. To make it worthwhile, Johnson emphasizes on the documentation of indigenous knowledge because private growers are the source of a vast amount of valuable technical information on the tari
making process and medicinal uses of palms sap [6]. The present study was undertaken to explore the indigenous medicament and economic sustainability in a palm abundant region for marginal farmers.

**Methodology**

The present investigation was carried out during 2013-2015 at Indian Agricultural Research Institute Regional Station, Pusa, Samastipur (Bihar). Usually more than 5 years old palms are selected for tapping when woody stem attains a height of at least 2 feet. The instruments used for pruning and tapping observed in the study area were *hasuli* (a sharp iron made cutting device with larger and thinner blade), a chisel, bamboo made basket used for carrying the instruments, rope, leather strip (*paski*), bamboo made carrier, earthen jars (*katia/lavni*) etc. After 6 days of pruning the palm is scratched with the *hasuli* and chisel during which thin scraps from the upper portion of the trunk are removed. On the 7th day, a tapping channel is cut and a bamboo made spout of 4 inches is inserted on the freshly cut trunk, another end of which is poured into the earthen jar placed and fastened just below the spout. The scratching of the trunk is done in every 7th day providing the palm a resting period of three to four days. After tapping, the palms were reported to produce sap in the successive 3 days, including the day of tapping. Generally, sap is collected from one side of the palm in one season and the successive season sap must be collected from the upper opposite side of the previous cut. This was evident from the zigzag appearance of the palm stems in the study area.

An alcoholic beverage (locally called *Tari*) was also observed to be made by the farmers. The basic technique of manufacturing *Tari* lies on fermentation. For preparing this wine the farmers were found not to wash the earthen pictures for 2/3 days after removing fresh sap from it which results in the formation of whitish lees at the bottom of the vessels. Mostly last precipitate of big fermentation earthen picture was used as starter for fast fermentation of sap. The 250ml of starter have been used for 45 liters of raw sap. Then the earthen picture is filled with screened sap and kept open for 24 hours. The cost and returns of sap to *tari* production was calculated by primary data collected from randomly selected ten shopkeepers during the study period and analyzed as per the standard procedures. Three hundred farmers (locally known as *Pashi*) and shopkeepers were interacted during the study round the year. The data were collected by using both interaction and participatory rural appraisal (PRA) techniques. The investigation included individual and group interviews with the respondent. PRA techniques namely, talk and semi-structured interviews were conducted with the selected farmers, *Pashi* and shopkeepers. The mission of identifying the indigenous practices was accomplished with the help of check list of questions put during the interaction and interviews. After locating the indigenous practices, a check list of 13 diseases/disorders was prepared. The data was also congregated on various aspects such as method of preparation and medicinal use of the *Tari*. The per cent of each rank was thus converted into scores. Then, for each problem, the score of individual farmers/shopkeepers were added and divided by the total number. The mean score for all the values were arranged in ascending order to obtain the rankings. To measure the degree of medicinal value as experienced by the farmers used for disease management, the respondents were asked to indicate on a major thirteen diseases continuum about the extent to which each disease was perceived as crucial factor.

**Results and Discussions**

The study shows that palms in the agricultural fields and other forest area produce almost equal amount of sap. Ten to fifteen years old palm produce the highest amount of sap (2.0 litre/palm/day), while the younger and older palms were producing the least amount (1.0-1.25 litre/palm/day) of sap. Tapping of the palms for sap production started from October and continued to March for approximately 180 days in the winter season. The jar is placed at the morning on the palm leaving for the whole day and night and the sap-filled jar is collected very early in the next morning. Fresh sap was collected in one drum and handover to shopkeepers for processing (Figure 1).
A three-layer formation is then found inside the earthen picture. The topmost layer is of foam which is carefully cast away, the mid-layer possesses clear liquid which is the Tari, and third one is the white layer of lees. The Tari from the second layer is then filtered out which is ready for drink and sale (Figure 2). Approximately 77.35% Tari was recovered from crude sap, which can be stored for at least one to two days. The shopkeepers/pashi claimed that manufacturing of Tari is the most profitable business. The average total cost (16575.30), total return (30528.00), net return (13952.70) and B: C ratio (1.83) was observed during the study (Table 1).

Table 1: Economics of tari sellers in pusa block of bihar.

| Name of Shopkeeper   | Raw Sap (Litre/ Month) | Tari (Litre/ Month) | Total Cost (6.30/Litre) | Total Return (15/Litre) | Net Return (Rs.) | B:C Ratio (%) |
|----------------------|------------------------|---------------------|-------------------------|-------------------------|------------------|---------------|
| Shivchander Mahto    | 3930                   | 3048                | 24759.00                | 45720.00                | 20961.00         | 1.85          |
| Amarjeet Chaudhury   | 2340                   | 1965                | 14742.00                | 29475.00                | 14733.00         | 1.99          |
| Aklu Mahto           | 4860                   | 3738                | 30618.00                | 60570.00                | 25452.00         | 1.83          |
| Dinesh Paswan        | 3780                   | 2925                | 23814.00                | 48750.00                | 20601.00         | 1.84          |
| Ganesh Mahto         | 1380                   | 1059                | 8694.00                 | 15885.00                | 7191.00          | 1.83          |
| Ashok Chaudhury      | 1320                   | 972                 | 8316.00                 | 14580.00                | 6264.00          | 1.75          |
| Mahendra Chaudhury   | 1200                   | 900                 | 7560.00                 | 13500.00                | 5940.00          | 1.79          |
| Manoj Sahani         | 1350                   | 987                 | 8505.00                 | 14805.00                | 6300.00          | 1.74          |
| Shinandan Mahto      | 4050                   | 3120                | 25515.00                | 46800.00                | 21285.00         | 1.83          |
| Sandeep Chaudhury    | 2100                   | 1638                | 13230.00                | 24570.00                | 11340.00         | 1.86          |
| Average              | 2631.00                | 2035.20             | 16575.30                | 30528.00                | 13952.70         | 1.83          |

Khajur palm for sap can earn substantial amount of cash money annually [9]. Chowdhury et al. [7] also reported that wild date palm was important for socioeconomic up liftment of small and marginal farmers in Bangladesh.

Traditional knowledge regarding medicinal uses of fresh sap (sap) and Tari for management of several common diseases were quarried. The diseases managed or controlled by the sap and tari were ranked in the order of merit according to the opinion of the respondents as per the Garret Ranking Technique (GRT) and the results have been presented in Table 2. Among the management of several common diseases, respondents ranked anti-heat stroke activity (mean score 52.56%) at rank I followed by jaundice (mean score 41.38%) at rank II and eye flu (mean score 38.30%) at rank III. Other diseases/problems like, constipation (37.00%) ranked IV, stomach problems (36.30%) ranked V, urinary complaint (27.00%) ranked VI, weight gain (26.00%) ranked VII, leucorrhea (12.15%) ranked VIII, Mamrakha in children (9.06%) ranked IX, recovery after pregnancy (8.26%) ranked X, power booster for bullocks (7.66%) ranked XI, relief in menstrual cycle (0.22%) ranked XII and let down of milk in women (0.03%) ranked XIII. Heat stroke, Jaundice, eye flu and stomach problem are the major problems of this region.
Table 2: Relative importance of various disease management categories perceived by the respondents.

| Uses                              | Frequency of Adopter Farmers | Rank |
|-----------------------------------|------------------------------|------|
|                                   | Score (%)                    |      |
| Eye flu                           | 38.30e                       | III  |
| Anti-heat stroke activity         | 52.56e                       | I    |
| Jaundice                          | 41.38b                       | II   |
| Recovery after pregnancy          | 8.26e                        | X    |
| Mamrakha                          | 9.06e                        | IX   |
| Stomach problems (Digestive)      | 36.30e                       | V    |
| Urinary complaints                | 27.00e                       | VI   |
| Sugar problem                     | 00.03e                       | XIII |
| Weight gain                       | 26.00e                       | VII  |
| Leucorrhoea                       | 12.15e                       | VIII |
| Constipation                      | 37.00e                       | IV   |
| Relief in menstrual cycle         | 00.22e                       | XII  |
| Power booster for bullocks        | 7.66e                        | XI   |

The fresh sap (500 ml/day) of particular date palm tree was consumed by jaundice patients just after harvesting without eating anything in the early morning up to one week is very effective in jaundice. The 1-2 drops of fresh sap were used up to 3 days for overcoming the problem of eye flue (locally known as lali) is found effective. Sap was also beneficial to recovery of one local disease known as Mamrakha in children. In this disease, infection in head along with eye lids also increases. One dose each in the morning and evening of sap (1-2 tea spoons) for 4-5 days was useful for the treatment of this disease. But regular use of sap is also harmful for the body and cause gastric problem.

Conclusion

We observed that fresh and fermented sap of wild date palm is used for treatment of several diseases. The fresh sap of particular date palm tree was used for jaundice, eye flue, Mamrakha in children, while fermented sap was effective against leucorrhoea disease in human, heat stroke, recovery in pregnancy, let down and production of milk in women, relief in menstrual cycle, weight gain, constipation, urinary complaints, stomach problems and recovery of weakness in bulls. It is the one of the profitable business for the small and marginal poor farmers of NEPZ, India with 1.83 B:C ratio.

Conflict of interest statement

We declare that we have no conflict of interest.
References

1. Hussain MD (2007) Harvesting sap from date palm and palmyra palm in Bangladesh.
2. Zaid A (1999) Date palm cultivation (FAO plant production and protection paper). Food and Agriculture Organization of the United Nations, Rome, Italy, pp. 1-6.
3. Anonymous (2007) Wild date palm.
4. FAO (Food and Agriculture Organization of the United Nations) (2007) Date palm sap.
5. Johnson DV (1996) Palms: Their conservation and sustained utilization. IUCN Publications Services Unit, Cambridge CB3 0DL, United Kingdom.
6. Johnson DV (1995) Palm conservation: its antecedents, status and needs.
7. Chowdhury MSH, Halim MA, Muhammed N, Haque F, Koike M (2008) Traditional utilization of wild date palm (Phoenix sylvestris Roxb) in rural Bangladesh: An approach to sustainable biodiversity management. Journal of Forestry Research 19(1): 245-251.
8. Dalibard C (2007) The potential of tapping palm trees for animal production.
9. Islam A, Miah MD (2004) Date palm husbandry in a selected area of Bangladesh: A study of marketing and income generation. Bangladesh Journal of Agricultural Research 29(3): 497-500.
10. Anonymous (2000) Encyclopedia of agricultural science. Anmol Publications Pvt. Ltd, New Delhi, India.
11. Naidu SJ, Misra MK (1998) Production and consumption of wild date palm sap and country liquor in two tribal village ecosystems of eastern ghat of Orissa, India. Bioresources Technology 63(3): 267-273.

This work is licensed under Creative Commons Attribution 4.0 License
DOI: 10.19080/JCMAH.2018.05.555669

Your next submission with Juniper Publishers will reach you the below assets

• Quality Editorial service
• Swift Peer Review
• Reprints availability
• E-prints Service
• Manuscript Podcast for convenient understanding
• Global attainment for your research
• Manuscript accessibility in different formats (Pdf, E-pub, Full Text, Audio)
• Unceasing customer service

Track the below URL for one-step submission
https://juniperpublishers.com/online-submission.php

005 How to cite this article: Saran P, Choudhary R, Devi G. Socioeconomic and Traditional Medicament through Wild Date Palm in India. J Complement Med Alt Healthcare. 2018; 5(4): 555669. 2018; 5(4): 555669. DOI: 10.19080/JCMAH.2018.05.555669.