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Exploration of Tribal Knowledge of *Entada pursaetha* DC: An Endangered Gigantic Medicinal Legume in Eastern Ghats

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Abstract

The third largest family of flowering plants is the legume family, with more than 18, 000 species. Legumes play an important role in daily human diet, and an array of compounds which can be useful in curing diseases. Tribals utilize many species in their daily lives; most of the uses are still unknown to researchers. *Entada pursaetha* is a gigantic creeper with giant pods among legumes, and is an endangered species. Many uses for this legume were discovered as a result of the surveys conducted by the authors at five localities in Eastern Ghats. These surveys helped to considerably sharpen our knowledge about this species. The seeds act as a good income source for tribals who sell them to the soap industry. They're also used as a tribal pulse.

Key words: Soap plant, tribal pulse, giant pods, gigantic liana.

INTRODUCTION

India, a land of physical, cultural, social and linguistic diversity, is also endowed by nature with an ecosystem and tremendous biodiversity, genetic as well as of species. It contains over 5 per cent of the world's diversity though it covers only 2 per cent of the earth's surface. But India is also one among the 25 hot spots of the richest and highly endangered eco-regions of the world (Myers et al. 2000). About 20,000 plant species are known from this region. The medicinal plants of the area have stood the test of time for their safety, efficacy,

cultural acceptability and lesser side effects (Khamboj 2000). Plant derived medicines from 7,500 species provide the Indian tribals with potentially effective treatment to various diseases. Maheswari (2000) has highlighted the importance of tribal medicine, which has not received the attention it deserves. Tiwari (1999) has opined that about 95% of the medicinal plants are collected by children and over 70% of the plant collections involves destructive harvesting mainly because of the use of plant parts like roots, bark, wood and whole plants. Frequently, species selected by local people for their social significance turn out to be also of ecological significance (Ramakrishnan 1996).

Legumes include a wide range of species from road-side weeds and valuable crop plants to ornamental shrubs, vines and giant canopy trees of the tropical rain forest. Legumes act as a mini fertilizer factory and contribute substantially to the fertility of the soil and they are also important sources of food, feed, forage, manure, timber, gum, etc. Pradhan (1995) emphasizes the key role the legumes play in daily human diet, owing to their immense nutritional value with high protein, carbohydrates, fats, vitamins, minerals, essential for tissue formation. In the developing countries where protein malnutrition is widespread, legume seeds play a vital role in bridging the protein gap and meeting the demand for proteins. Less known tribal pulses could make a useful contribution to world food production due to their adaptation to adverse environmental conditions and, in some instances, high disease and pest resistance, and possessing good nutritional qualities (Vijayakumari et al. 1993).

Entada pursaetha is a gigantic woody liana among legumes, which produces 90-150 cm long woody giant pods (Fig. 1) with 5-30 seeds (Fig. 2). All parts of this species contain saponins and are thus used in the soap industry. This species is reported as tribal pulse (Siddhuraju et al. 1993). Its semi ripe seeds are also used as a substitute for coffee. The plant material is used by the tribals as a broad spectrum compound. This species can be used as a narcotic or as a tonic, etc, or used in curing liver troubles, allaying body pains, in warding off cold, curing eye diseases, arthritis, and paralysis (Johnson 1999). This species is reported as endangered (Janardhanan et al. 2001, Varak and Suryanarayana 1995, Jadhav et al. 2001). In recent times, there has been a deeply felt concern for the conservation and preservation of *E. pursaetha* germplasm (Das 1994) owing to an increasing realization of its importance and usefulness. The present study was carried out to explore the tribal's knowledge and traditional uses of this species.

MATERIALS AND METHODS

The Eastern Ghats of India are located between 11°30¢ and 22°N latitude and 76°50¢ and 86°30¢ E longitude, spread over three continuous states of India, namely Orissa, Andhra Pradesh and Tamil Nadu, which are highly significant in terms of biodiversity**.** Five

locations such as Araku valley (82º 52'0E, 18º 19' 60N) of the North-Eastern Ghats, Rollapenta (78º 49'0E, 15º 52' 60N) of the central region, Talakona (78º 8E, 13º 43'N)and Tirumala (79º 20'60E, 13º 14' 60N)in the southern part of Andhra Pradesh, and the Kolli hills (78º 30'E, 11º 30' 60N) of the South-Eastern Ghats in Tamil Nadu were selected for the present study, where tribals inhabit and use this species,. Continuous field trips were undertaken to the study area, and the names of the various tribal communities, their professions and how they use this species for different medicinal and domestic purposes were elicited from them and recorded.

RESULTS AND DISCUSSION

In the field studies, it was found that the plant population was comparatively large at Talakona (fifteen individuals), while at the Araku Valley, Rollapenta and Tirumala only one individual was found at each place. And in the Kolli hills four individuals were found. Of the four, one was totally devoid of bark, which, as the local inhabitants explained, was due to its being used in the soap industry. In this area, the people knew about this species and they sold its seeds to the soap industry as it was a source of income for them.

In Araku Valley, there are nine tribal communities, in which two communities (Valmiki, Bakatha) represent 90% of the population; one community each was found in Rollapenta (Chenchus) and Kolli hills (Malai grounder); Yanadi community represented approximately 80% communities compare to Girijan and Lambadi; Simultaneously, 75% tribals at Tirumals belong to Nakkalolu and the rest 25% with Guvvalolu group. Surveys brought to light the multi uses of the species. Interaction with the tribal families brought out several interesting facts that almost all of them, men, women and children, were aware of the presence of this plant because of its giant pods and twisted tendrils (Fig. 3), but they did not know that it was endangered. Tribals of all five localities utilize the species for multi purposes in their lives, those uses were recorded (Figs. 4, 5, 6) and similar uses were listed (see below).

Seeds

Medicinal uses

- Seeds are considered alexiteric, narcotic, tonic, emetic, anthelmintic, antipyretic, febrifuge, and hemorrhoidal.
- The powdered kernel of the seeds is given to women for some days immediately after delivery for allaying body pains and warding off cold.
- Used as stomachache, carminative and anodyne.
- Excites appetite, control fever and relieves pain.
- Used in pains of the loins, in debility and in inflammatory glandular swellings and for scabies.

- Roast and cook the seeds to detoxify and use as tribal pulse.
- Half-ripe seeds are used as a substitute for coffee.
- Paste of the seed kernel, green algae (i.e *Anabena*) and *Solanum myriacanthm* in 2:1:2 proportions is used to women for 7 days after menstruation as contraceptive.
- Seed powder and paste of long pepper in a 2:1 ratio is used for intestinal worms.
- Seed powder with ghee in a 2:1 ratio is used as an anodyne and given to women as oral contraceptive.
- To cure liver troubles, and to cure mumps.

Miscellaneous uses

- Income is derived by selling the seeds to the soap industry.

Bark

Medicinal uses

- Skin diseases.
- Stem as an emetic.
- Bark juice to cure ulcers and internally as a vulnerary.

Miscellaneous use

- Soapy solutions of leaves to wash their bodies and fabrics.

Leaves

- The leaves are smeared with warm coconut oil and placed on the head of a child for infantile cold.
- The leaf juice is given orally to children every morning for three days for infantile cold.

Miscellaneous uses

- Soap industry.

Root

- The root paste along with the powder of black peppers in a ratio of 3:1 is given to women in the treatment of epilepsy.

The various tribal communities of the above mentioned locations revealed specific uses for this legume. The specific uses, tribal community names, their languages, vernacular names of the species are given in Table 1. When we focused our eyes on Tirumala, Kolli hills, we learned that the tribals were increasing their income by selling their seeds as fertility stimulating agent, and to the soap industry (Figs. 7, 8).

Overall, our major findings coincide with such previous researchers as Ravishankar et al. (1994), who mentions a medicine for inflammatory swellings and for the making of shampoos, and Siddhuraju et al. (1993) who describes a tribal pulse. The other uses collected by us, including medicinal uses, require laboratory analysis. If the species could be protected and propagated it could serve as good herbal shampoo material besides improving the economic conditions of the tribal inhabitants of forest areas. Understanding of the ethnic perceptions of any species is necessary for *in situ* and *ex situ* conservation projects, which help to enhance the effectiveness of educational efforts (Burgess 1994). The local people's involvement and intervention in any conservation of species is very important, and without their active co-operation, the conservation of existing population will not happen, so while collecting the tribal information, we created awareness in them about their role in conservation of this species from further extinction.

CONCLUSION

This type of survey has been helpful in bringing to light the uses of plant species whose utility had not been previously known. It has also been helpful not only in exploring tribal uses, but in creating awareness about the role of tribals in the conservation and protection of this species from further extinction.

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Table 1. Tribal uses of *E. pursaetha*.

Location name	Tribal communities	Tribal languages	Local names/vernacular names	Tribal uses
Araku Valley	Bagatha, Valmiki, Nookadora, Konda dora, Konda Kapu, Koya dora, Kutiya, Korzaa, Savara.	Oriya, Kulee, Savara.	Tilokayalu	a)Water paste of kernel is applied on boils; severe eye diseases; on upper jaw of mouth in case of mouth cancer. b)Kernel paste is given 2-3 times/day for 5-6 days to piles patients. c)Tooth brush stick is prepared from stem and used for 5 days to clean and remove the infection of gums. d)Root piece is tied in waist-string against harmful effects of evil powers.
Rollapenta	Chenchus	Telugu	Devil fruit tree /Gila teega	a)Water paste of seeds used in skin diseases. b)Seeds as tribal pulse. c)Seed paste in hair wash. c)Seed paste in joint pains.
Talakona	Yanadi, Girijans, Lambadi	Telugu	Gila teega, big forest Tamarind seeds, Devil plant	a)Seed paste is applied on scalp and kept for 10 min to remove dandruff and relieves from tension and act as good shampoo to hair. b)Seed paste is used in body, knee and back pains. c)Cooked seeds when are eaten relieves stomachache.
Tirumala hills	Nakkalolu, Guvvalolu	Telugu	Big forest Tamarind	a)Coconut oil pasted kernel is mixed with camphor and used in sole pains, knee

				pains, joint pains, backache, wounds. b)Seed paste is applied in boils and rashes of testis. c)Seed powder used as shampoo. d)Water paste of kernel is applied on total body at night and at morning hot water bath was taken to relieve body pains and check fever. e)Young seeds are used as pulse.
Kolli hills	Malai grounder	Tamil	Paparang Kottai, Pappattan kodi, Yanai Kalichi Kottai.	a)Seeds used in hair wash and are selling to soap industries. b)Liana is used in preparing huts and rupees. c)Seeds used as pulse.

Fig. 1. Pod (1cm Bar=1.2 mm)

Fig. 2. Seeds (1 cm=5.6 mm).

Fig. 3. Interaction with tribals at Talakona.

Fig. 4. Collection of tribal uses at Talakona.

Fig. 5. Recording the tribal uses at Tirumala hills.

Fig. 6. Collection of tribal uses at Kolli hills.

Fig. 7. Nakkalola tribal woman selling the seeds of *E. pursaetha* along with *Pinus* cones.

Fig. 8. Nakkalola tribal man selling seeds.