



ISSN (E): 2320-3862  
ISSN (P): 2394-0530  
NAAS Rating 2017: 3.53  
JMPS 2017; 5(3): 89-91  
© 2017 JMPS  
Received: 03-03-2017  
Accepted: 04-04-2017

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## Traditional and commercial uses of *Litsea glutinosa* (Lour.) C.B. Robinson (Lauraceae)

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### Abstract

The semi-evergreen dioecious tree species, *Litsea glutinosa* is traditionally used for treating various human ailments and diseases. Almost all parts of the tree are used traditionally but only the bark has high commercial value and in fact it is over-harvested unscientifically causing the death of the trees throughout its distribution range including India, especially in the north-eastern region. It is principally used as a binding agent in incense-stick industry and lately seriously being considered as binding agent in tablet formulations and as plasters for fractured limbs. The bark exploitation as a seasonal livelihood source for tribal communities in the Eastern Ghats of Andhra Pradesh and the present state of *L. glutinosa* here have been examined in this paper.

**Keywords:** *Litsea glutinosa*, bark harvest, livelihood source, incense-stick industry

### 1. Introduction

*Litsea glutinosa* is native to India, Southern China, Malaysia, Australia and the Western Pacific islands. It is found throughout Asia, including several regions of China, India, Bhutan, Myanmar, Nepal, the Philippines, Thailand and Vietnam. It grows at an altitude of 500-1900 m above sea level, in forest margins, stream sides, sparse forests or thickets<sup>[1]</sup>. It colonizes all open areas but also survives in more shaded areas and undisturbed forests<sup>[2]</sup>. In India, it occurs in mixed primary and secondary forest and thickets in the North Eastern region of India<sup>[3]</sup>. It is an endangered tree species in Philippines<sup>[4]</sup>. It was once abundant in Bangladesh but it is now very rare and vulnerable to extinction due to unsustainable collection of bark for commercial purpose<sup>[5]</sup>. It is a red-listed tree species and considered as critically endangered in the Eastern Ghats of Andhra Pradesh, India<sup>[6]</sup>.

*Litsea glutinosa* wood is used for making agricultural tools, root fiber for making ropes and paper pulp, young leaves for fodder, seed oil for making candles, soaps and seed powder for treating skin boils. The bark mucilages consist of hetero-polysaccharide polyuronides consisting of sugar and uronic acid units which are formed from the cell wall and deposited on it in layers. These polyuronides swell in water and form a gel which is then used as binding agent<sup>[7]</sup>. The bark of *L. glutinosa* is used to relieve pain, arouse sexual power, produce a soothing effect on the body and arrest bleeding. Bark paste is applied to bind fractured limbs and cure the wounds developed on the neck of bullocks due to frequent friction of the yoke with the body<sup>[8]</sup>. The Bark mucilage is experimentally proved to be an effective binding agent in tablet formulations<sup>[3]</sup>. In Orissa, the traders are engaged in the large scale extraction of this glutinous bark to supply it to Agarbatti (incense sticks) industries which use this bark as a substitute for the bark of *Persea macarantha*, another famous species of Lauraceae. In Agarbatti making, the paste of the powdered bark is used as a binder for making incense sticks and cones due to its excellent viscosity and adhesive properties which aid in continuous burning. Further, the odorless characteristic of the bark helps in retaining the original fragrance of the perfume in incense sticks. In consequence, this species has become endangered in this State. Keeping the traditional and commercial importance of *L. glutinosa*, the present work was contemplated to provide the exploitation level of its bark in the Eastern Ghats forest region of Andhra Pradesh and explained how it provides livelihood source for the local people, especially tribes living in the vicinity.

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### Materials and Methods

*Litsea glutinosa* is widely distributed in the Eastern Ghats of Andhra Pradesh. Field studies were carried out in the northern Eastern Ghats consisting of two wide areas, Seetampeta forest (elephant zone) in Srikakulam District and Galikonda forest in Visakhapatnam District during January-May 2016. The southern Eastern Ghats forest representing in Chittoor and Kadapa districts also has considerable populations of *L. glutinosa*. But, this vast area has been declared Seshachalam Biosphere Reserve in 2011 due to which collection of any produce from this area is prohibited since then. Tribals in these areas were interviewed to collect information on *L. glutinosa* bark harvest activity. The bark collection sites were visited to see and record how the bark was harvested from the tree. Further, information was collected as to how the bark was stored and transported for storage facility for sale. Based on field observations, certain recommendations were made for the sustainability of this tree resource. Field survey was carried out in the northern Eastern Ghats areas to record the ratio of staminate and pistillate trees.

### Observations

*Litsea glutinosa* is a dioecious tree species (Figure 1a) with staminate and pistillate individuals and distributed widely in the entire stretch of Seetampeta forest from the foothill to the hill top. The tribals of nine nearby villages such as Antikonda, Dhonibaya, Valagedda, Kusimi, Gajali, Chaakaliguda, Kotham, Puthikavalasa and Kotturu Gummada go into the interiors and cut down trees and collect bark regularly. After paddy harvest in January, these villagers collect bark during February-April with intense collection activity during mid-February-mid-March (Figure 1c,d, e). With their traditional knowledge, they select trees aged 5-7 years with trunk girth ranging from 25-65 cm for bark collection. The trees with 55-65 cm trunk girth yield high quality bark varying in thickness ranging from 1.5-2 cm. Individual trees of this age yield 4-5 kg of bark. Each person collects about 15 kg of bark per day and about 950 kg of bark per season. The cost of 1 kg of bark is ₹ 32-35. Each person earns a total amount of ₹ 30,400-33,250/- per season. Similarly, tribes collect bark of *L. glutinosa* at about the same time in the Galikonda area of Northern Eastern Ghats of Visakhapatnam District, where this the tree has scattered distribution.



**Fig 1:** *Litsea glutinosa*: a. Tree with new leaf flushing, b. Trunk, c. Bark harvest by local tribe, d. & e. Scars left after bark harvest in the previous year, f. Bark chips bagged, g. Unloading of the bark bags for delivery to Girijan Co-operative Corporation, Government of Andhra Pradesh, h. Male flowers, i. Female flower

Prior to bark harvest, the tribes mark the area on the trunk and then strip the bark using a shovel. They collect several large strips of bark from each tree and take them to their homes. Then, the bark is dried for several days, bagged and pooled up to a central facility for transportation in truck loads for sale, especially to the Girijan Co-operative Corporation (GCC), Government of Andhra Pradesh (Figure 1f, g). This corporation then sells it to the buyers or companies which are involved in processing of this bark for commercial use, especially as binding agent in Agarbatti making. Traditionally, the tribes store the dried bark and use it in

powdered form to treat bruises inflicted by blows, skin diseases and use as plastering material over fractures or sprains in humans and animals. The tribes carry out repeated stripping of the bark on the same tree; in effect, such trees gradually wilt and eventually die. Further, the tribes also cut down the trunk or stem to root level for use as fuel wood (Figure 1b) and for making certain agricultural tools. Field observations showed that *L. glutinosa* bark is unscientifically over-exploited causing rapid decline of its populations in the entire northern Eastern Ghats forest. Field survey in this area showed that the ratio of staminate and pistillate trees is 3: 1

indicating only 1/4th of total trees are involved in sexual reproduction and hence there is limitation in fruit or seed set rate for regeneration from seed mode.

### Discussion

Traditionally, *L. glutinosa* is used for different purposes not only in India and almost throughout its distribution range [7-9]. Of the different parts of the tree, the bark has high commercial value due to its binding properties. It is principally used to bind fractured limbs, tablet formulations and in making incense sticks [3, 8]. Incense stick (Agarbatti) industry is using huge quantity of bark over a period of time. In effect, the tree species has become endangered in Philippines, Bangladesh and India. Repeated stripping and unscientific debarking are the major factors causing the rapid decline of this species. Further, bark collector's either cut down the trees and even do not spare the roots [8, 9]. Recently, CSIR-DSIR Annual Report 2012-2013 documented that the dwindling supply of its bark is posing a grave threat to the survival of about 3000 crores strong incense-stick industry in India. In effect, CSIR-National Innovation Council has initiated search for alternative ingredients. CSIR-CIMAP has come up with the ingredients such as charcoal or *L. glutinosa* flower powder in combination with its bark to sustain incense-stick industry. But, the combination of flower powder and bark of this tree is 'skin friendly' for the workers who are engaged in this industry because it keeps their hands and work place clean. *L. glutinosa* being dioecious produces daily innumerable number of flowers in staminate and pistillate flowers with the former producing more flowers than the latter (Figure 1h, i).

The study suggests that the restoration of populations of *L. glutinosa* in its natural areas and also elsewhere is imperative in order to supply the bark resource and sustain industries using this resource commercially. Further, the people involved in harvesting the bark should be trained in such a way that repeated debarking is avoided and the bark is harvested scientifically to enable the trees to survive and yield bark again.

### Acknowledgements

We thank the Andhra University, Visakhapatnam for providing physical facilities. The first author is thankful to DST-SERB for providing financial assistance to do field work.

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