



Study on prospect and livelihood potential of Mahua seeds oil with special references to two villages of Machkot forest range Jagdalpur Bastar (C.G)

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Abstract

The present investigation of dissertation entitled “Study on prospects and livelihood potential of Mahua seeds oil with special reference to two villages of Machkot forest range” was carried out at Machkot forest range of Bastar district (C.G). During the year 2018. Mahua seeds are very useful to the tribal people in Bastar plateau of Chhattisgarh and so, to conserve this highly valuable tree species for the tribal livelihood. Therefore, Mahua seeds are very useful to the tribal people in Bastar plateau of Chhattisgarh and so, to conserve this highly valuable tree species for the tribal livelihood. It is required to explore the maximum livelihood potential and the proper processing & consumption of Mahua seed oil at village level in Chhattisgarh.

Keywords: mahua seeds, forest, edible, livelihood, bastar, tribal etc

Introduction

Mahua is a large deciduous tree growing widely under dry tropical and sub-tropical climatic conditions. *Madhuca indica* distributed in Andhra Pradesh, Gujarat, Madhya Pradesh, Odisha, Chhattisgarh, Jharkhand, Bihar, Uttar Pradesh. It is an important tree for poor, greatly valued for its flowers and its seeds known as tora. The tree has religious and aesthetic value in the tribal culture. The trees with best girth in forest are often Mahua trees as it is protected and cared by forest dwellers. Mahua tree can be found in forests, revenue, and private land. The early settlers had rights to specific Mahua trees occurring near the village in private, revenue and forestlands. Some trees may even be located at long distance from the village but are recognized as being associated to a family. These rights are only for harvesting flowers but not for fruits and have been practiced. These rights have passed from generation to generation. When father divides the property among his sons, he also divides Mahua tree between them but keeps some for himself till the end, as it becomes an easy source of income (Mishra and Pradhan, 2013).

Since the beginning of human civilization, medicinal plants have been used by mankind for its therapeutic value has been a source of medicinal agents for thousands of years and an impressive number of modern drugs have been isolated from natural sources. Many of these isolations were based on the uses of the agents in traditional medicine. The plant-based, traditional medicinal systems continues to play an essential role in health care, with about 80% of the world's inhabitants relying mainly on traditional medicinal for their primary health care. (Kumar *et al*, 2015) [2].

Although indigenous plant like *Madhuca indica* and their production (active, natural principal and crude extracts) have been used in the Indian traditional system of medicine, but still its pharmacological activities have not been fully explored. (Kumar *et al*, 2015) [2]. Mahua seeds are rich in edible oil so they have economic importance. Mahua fruits are used as vegetable. *Madhuca Indica* is also considered as

medicinal tree and is useful for external application in treating skin diseases, rheumatism, headache, chronic constipation, piles, haemorrhoids and ethno medical properties like antibacterial, anticancer, hepatoprotective, antiulcer, antihyperglycemic, analgesic activities etc. Mahua flower is not only used in preparation of liquor but can also utilized as a food ingredient for preparation of biscuit, cake, laddu, candy, bar, jam jelly, sauces etc. Mahua oil is used for manufacturer of laundry soaps and detergent, and also used as cooking oil in various tribal region of India. *Madhuca Indica* is reported by various scientist that it contain sapogenins, triterpenoids, steroids, saponins, flavonoids and glycosides. The tree is considered a boon by the tribal's who are forest dwellers and keenly conserve this tree. The tribes consider the mahua tree and the mahua drink as part of their cultural heritage. So it is very much necessary to create awareness among the people to conserve the forest. (Bisht *et al*, 2018) [1]. Fruits are covered by a thick rind ranging in color from yellow to red (Holland *et al*. 2009). The edible part of the fruit, the sarcotesta, accounts for 52 % of entire fruit weight, including 78 % juice coming from sarcotestas and 22 % from seeds. Fresh juice contains 85.4 % water and 15.6 % dry substance, composed of sugars, organic acids, pectin's, anthocyanins, polyphenols, vitamins and minerals. In turn, seeds are rich sources of proteins and punicalagin. The rind is a rich source of polyphenols, mainly hydrolyzing tannins and anthocyanins, which are responsible for the bitter taste and its coloring (Fisher *et al*. 2011). Therefore, Mahua seeds are very useful to the tribal people in Bastar plateau of Chhattisgarh and so, to conserve this highly valuable tree species for the tribal livelihood. It is required to explore the maximum livelihood potential and the proper processing & consumption of Mahua seed oil at village levels. of this multipurpose tree.

Material and Methods

The present work was carried out in the village of Machkot & Kumhali block of Bastar district and Bastar, Chhattisgarh

during the month of May – July 2018. This study areas very significant for oil-seeds yielding plants/trees studies showing to the dominance of different tribal communities. Like Muriya, Bhatra, Gond etc. The extensive studies were conducted with the help of tribal people and village medicine- men of the area and information's gathered local name, used plant part and medicinal importance of plants. Plants were collected from the field, given notes by the information on plant part used (seeds) and local uses were recorded on the labels. This information collected was by cross-checking with tribal living herbal medicine practitioners of various ethnic groups through interviews, personal contacts and keen observations. The information about their availability in the forest and their uses by tribal's are also recorded. The parts used as extracting oil also either taken raw or after processing are briefly noted. The traditional techniques and the modern processing techniques of the oils – seed tree species are enquired and briefed well.

Result and Discussion

The study was carried out at Machkot village and Kumhali village of Bastar district during the March 2018 to June 2018 with the help of personal interview and household survey. The Mahua seed oils (*Madhuca Indica*) and their total collection and per household/ family income were recorded during the study and it is presented in table no. 1 it was observed that the average annual income from Mahua seed/oils was Rs. 2495/- where as total annual income is Rs 49900/- from 20 household / families of Village Kumhali. The proportion of total seed collection is apply 25 quintals at village Kumhali and on average collection of Mahua seeds is 125 kg per family (H.H). Whereas the Mahua seed oils (*Madhuca Indica*) and their total collection and per household/ family income were recorded in Machkot Site and it is presented in table no.2. It was observed that the average annual income from Mahua seed/oils was Rs. 20660/- where a total annual income is Rs 413200/- from 20 household / families of village Machkot. The proportion of total seed collection is apply 800 quintals at village Machkot and on average collection of Mahua seeds is 1065 kg per family (H.H).The annual income for the Mahua seeds (*Madhuca Indica*) selling are Rs 2500/- in Kamahali village where as the annual income from the selling of Mahua seed are higher in Machkot Villages which is Rs 20660/- only at Machkot village. It was found that the Mahua seeds (*Madhuca Indica*) are main livelihood indicator of tribal people in the Machkot forest range.

The consumption trend of Mahua oils seeds (*Madhuca Indica*) in Kumhali village are show in Table no.3. The total collection of Mahua oils seed (*Madhuca Indica*) is Rs 2495 kg out of this the household utilized for the domestic purpose and market purpose in years, the total consumption by the village in domestic purpose is Rs 161 kg where as Rs 2174 kg as market purpose.

Where as the consumption trend of Mahua oils seeds (*Madhuca Indica*) in Machkot village are show in table no.3 The total collection of Mahua oils seed is Rs 21300 kg out of this the household utilized for the domestic purpose and market purpose in years, the total consumption by the Village in domestic purpose is Rs 1510 kg where as Rs 19790 kg as market purpose. It was found that the 20 households of Village Kumhali was processed and extraction 945 litter Mahua seed oils (*Madhuca Indica*) by

modern extraction method. It was formed that the 20 households of Village Machkot was processed and extraction total 8520 litter Mahua seed (*Madhuca Indica*) oils by modern extraction method.

Mahua is a common name used for *Madhuca Indica*, it belongs to the family Sapotaceae. It is an important economic tree growing throughout India. Mahua is a highly nutritious tree and can also use as an herbal medicine for treatment of various disease. Present paper review the earlier work performed on mahua flower, fruit and seed and highlight the use of mahua flower in value addition. Phytochemistry study of mahua shows that it is rich in sugar, vitamin, protein, alkaloids, phenolic compounds etc. A lot of therapeutic research was carried out on mahua which shows its ethnomedicinal properties like antibacterial, anticancer, hepatoprotective, antiulcer, antihyperglycemic, analgesic activities etc. Mahua flower is not only used in preparation of liquor but can also utilized as a food ingredient for preparation of biscuit, cake, laddu, candy, bar, jam jelly, sauces etc. This review paper focusing on employment and income generation through commercial use of mahua flower, fruit and seed in medicine and food industry. The market survey of Mahua oil seeds (*Madhuca Indica*) was done during the month of May -June 2018. The total quantity of Mahua seeds (*Madhuca Indica*) was collection by the tribal people which is 8700 kg (87 qutl) and average collection for selling in local weekly (Nagarnar, Madpal) is 870 kg, it was fomed that the village of Kumhali and Machkot were earn money for the selling of Mahua seeds (*Madhuca Indica*) only. The average annual income from the selling of Mahau seeds in local market is Rs 15240/- by the tribal people (table no. 04).

It was also observed that the no well-organized market channel in the village level for the betterment of tribal people for the marketing of Mahua seeds (*Madhuca Indica*). The marketing of Mahua oils/seeds, total dependent family/H.H., Total quantity sold in local market and annual income etc. were presented in table no. 04 during the study, two local weekly market namely Nagarnar and Madpal were survey in the month of June 2018. The total depended family is that 53 are fully engaged in the collection and selling of Mahua seeds in this local market. The both market are situated in between the two Village (Kumhali and Machkot). The market rate of Mahua oil seeds is Rs. 20/- in both market the maximum collection of the all 53 collector was 8700 kg and average collection is 870 kg. per year per house hold in both villages. It was calculated the average annual income from the selling of Mahua seeds is Rs.15240/- per year per house hold (Table No. 04).

Processing of Mahua Oils.

Mahua seed collection is done in month of May – June in a year. The seeds are separated from them and tribal people use the pulp for their food. After removal of pulp, seeds are washed and soaked in water for 3 - 4 days so that the seed coat softens. The villagers carry the pulp out of the fruits then the seed coat is taken out and seeds are sundried during processing. Thereafter the covering the seeds through grind stones the seeds is directly putted into the oil extraction unit (Machine) and then the filtered oil comes out in storage chamber. Mahua oil is mainly used in the edible purposes and medicinal purposes by the tribal peoples in the Bastar District. They always used the mahua seed oil in lamp for lighting in their house. Mishra and Pradhan, (2013) Studied

that, Mahua seeds contain about 40% pale yellow semi-solid fat. The seed oil is commonly known as 'mahau butter'. The oil content of the seed varied from 33 to 43% weight of the kernel. For tribals of India, *Mahua* oil is by far the most important tree seed oils. Fresh Mahua oil from properly stored seed is yellow in colour with a not unpleasant taste.

The oil is used as cooking oil by most of the tribes in Odisha, Chhattisgarh, and Maharashtra etc. The oil is used for edible and cooking purposes. Since the beginning of human civilization, medicinal plants have been used by mankind for its therapeutic value. *Madhuca indica* is an Indian tropical tree found largely in the central and north Indian plains and forests.

Its common or trade name is Mahwa or Mahua. Various parts of *Madhuca indica* has been used traditionally for different ethnomedicinal purposes (Kumar, *et al.* 2015) [2]. *Madhuca indica* commonly called as Mahua is such a kind of tree involved in day to day activity of tribal people. It belongs to the family Sapotaceae, an important economic tree growing throughout India. Mahua seeds are rich in edible oil so they have economic importance (Bisht *et al.* 2018) [1].

Tribal's of Madhya Pradesh use several plants to fulfill their basic requirements like food, medicine, shelter, etc. Among the plants used, Mahua (*Madhuca indica*) plays an important role in socio-economic life of tribal people (Sikarwar, 2002) [9].

Summery and Conclusion

The production of Mahua oil seeds can be increased by necessary development in high yielding, high-breed variety of these plants so that their yield may be accelerated to meet the higher demand. Mahua oil is mainly used in the edible purposes and medicinal purposes by the tribal peoples in the Bastar District. They always used the mahua seed oil in lamp for lighting in their house. And the commercial uses of mahua oil in used in the manufacturing of soaps, particularly laundry soaps. Refined oil finds use in manufacture of lubricating greases and fatty alcohols. Since the mahua oil is made domestically even in village, it reduces the dependence on imported petroleum based oils saving considerable foreign exchange for better national economy (Kulkarni *et al.*, 2013) [3]. In future generation the important and demand of trees and mahua seeds is going to be increase because of their livelihood dependency, market potential and edible & medicine properties which are easily available in Bastar forest as well as Chhattisgarh.

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Photoplate 1: Fruiting of Mahua tree (*Madhuca indica*)



Photoplate 2: Processing of Mahua seeds

Table 1: Annual Income from Mahua seeds collection in study site, Bastar district, Chhattisgarh

S.No.	Name of Village	Total collection of Mahua seeds	No. of Mahua trees selected for Seeds collection	Total Income by selling of Mahua seeds (Rs.)	Average Annual Income per House hold (In Rs.)	Total Beneficiaries/ House holds
1	Kumhali Village	2495 kg	113	49900/-	2495/-	20
2	Machkot Village	21300 kg	132	413200/-	20660/-	20

Table 2: Collection and consumption trends of Mahua Seeds at study site in Bastar district, Chhattisgarh

S. No.	Name of Village	Total collection of Mahua seeds (kg)	Total consumption		Total Beneficiaries/ Collectors / House holds
			Domestic Purpose (kg)	Marketing Purpose (kg)	
01	Kumhali Village	2495 kg	161	2174	20
	Average annual collection	125 kg per HH (approximate)	8kg per HH (approximate)	108 (approximate)	
02	Machkot Village	21300	1510	19790	20
	Average annual collection	1065 kg per HH (approximate)	75.50 kg per HH (approximate)	989.50 (approximate)	

Table 3: Status of Mahua Seed oil production in study site Bastar district, Chhattisgarh

S. No.	Name of Study Village	Total collection of Mahua seeds (kg)	Total Oil Extraction from Mahua Seeds (kg)	Total Beneficiaries/ Collectors / House holds
01	Village – Kumhali	2495	Total = 964	20
	Total =			
	Average collection per house hold =	124.75 kg	Average collection per house hold = 48.20 kg	
02	Village – Machkot	21300	Total = 8520	20
	Total =			
	Average collection per house hold =	1065 kg	Average collection per house hold = 426 kg	

Table 4: Marketing of Mahua Oils in Local Weekly market namely Nagarnar and Madpal village of Bastar districts, CG

S. No.	No. of Mahua collectors	Total Mahua seeds sold in local market (kg)	Selling price of Mahua seeds (Rs/ kg)	Annual income in Rs	Name of Weekly Market
1	5 members per HH	600	20/-	1200	Nagarnar Madpal
2	9 members per HH	1200		24000	
3	3 members per HH	900		18000	
4	6 members per HH	1400		28000	
5	5 members per HH	700		14000	
6	6 members per HH	900		18000	
7	4 members per HH	500		10000	
8	4 members per HH	600		1200	
9	6 members per HH	1200		24000	

10	5 members per HH	700		14000	
Total	53	8700	20/-	152400	
Average collection		870		15240	

Out of 10 house hold, 53 collectors in both villages were sold the mahua seeds at local weekly market in Bastar district, Chhattisgarh.

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