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DOCUMENTATION OF MAHUA BASED INDIGENOUS RECIPES AMONG THE TRIBES OF GADCHIROLI DISTRICT

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ABSTRACT

Gadchiroli district is very well known for its richest diversity of flora and fauna. Mahua (*Madhuca longifolia*), is a multipurpose tree commonly found in the forest of Gadchiroli district and is harvested for its edible flowers and seeds by the tribal peoples. Gond and Madia are the two most dominating tribes of Gadchiroli district using this plant since time immemorial. They collected the fresh flowers and fruits of this plant in the summer. The succulent, fleshy blossoms consumed either fresh or dried, ground into a powder and combined with flour, utilized as a sweetening agent, or fermented to produce local alcoholic beverages. Laddu, Kheer, Puri, Thalipith etc. were prepared from flower. The mahua fruits are employed as a vegetable and are predominantly used to make curries by rural tribal communities. Mahua tree is regarded as a cultural heritage by the tribal communities.

KEYWORDS: Mahua, Gadchiroli, Tribes, traditional uses.

INTRODUCTION

We were gifted by Nature with a vast array of diverse plants that serve multiple functions, including decoration, flowering, fruiting, and medicinal applications. The increasing adoption and commercial utilization of the medicinal properties of various plants have become a notable trend among many individuals. Consequently, underutilized plants that have been traditionally used are now attracting significant attention from researchers and industry professionals. India is renowned for its extensive diversity of such plants, which are traditionally utilized and hold potential for commercialization, including species like mahua, rhododendron, kachnar, moringa, and gulmohar, among others. Mahua, in particular, is a

plant that is gaining prominence in both the cultural and economic spheres of traditional communities (Dave *et al.*, 2018).

Mahua (*Madhuca longifolia*) is a member of the Sapotaceae family and is native to various regions including India, Sri Lanka, Myanmar, and Nepal (Dave *et al.*, 2018). This versatile tree meets three essential needs of tribal communities: food, fodder, and fuel (Patel *et al.*, 2011). The flowers of the plant are consumable and possess significant nutritional value, particularly due to their high sugar content, along with substantial amounts of vitamins, proteins, minerals, and fats (Patel *et al.*, 2011).

Mahua is a frost-tolerant species that thrives in the marginal areas of dry tropical and subtropical forests, reaching altitudes of 1200-1800 m in India. It requires an average annual temperature ranging from 2-46°C, annual rainfall between 550-1500 mm, and annual humidity levels of 40-90% (Mishra and Pradhan 2013).

In India, substantial populations of mahua trees are located in states such as Uttar Pradesh, Madhya Pradesh, Orissa, Jharkhand, Chhattisgarh, Andhra Pradesh, Maharashtra, Bihar, West Bengal, Karnataka, Gujarat, and Rajasthan, with an estimated annual production of mahua flowers reaching 45,000 million tonnes (Behera *et al.*, 2016). The yield of mahua flowers per tree ranges from 80-320 kg (Patel *et al.*, 2011). Madhya Pradesh stands out as the leading state for mahua cultivation, with an average trade volume of 5,730 metric tonnes valued at approximately 8.4 million Indian rupees (Thakur and Babu 2008).

Demographic and Sociocultural Landscape of the Study Area

The Gadchiroli district, located in the easternmost part of Maharashtra, India, is distinguished by its extensive forest cover, which constitutes over 75% of its total geographical area, and a notably dense indigenous population, with Scheduled Tribes making up more than 38% of the district's demographic composition. This ethnobotanically diverse region is predominantly inhabited by the Madia Gond (including the Hill Madia, classified as a Particularly Vulnerable Tribal Group [PVTG]), the Raj Gond, the Pradhan, along with smaller communities of the Kanwar and Halba. These indigenous populations sustain a profoundly symbiotic and interdependent relationship with the local dry deciduous forest ecosystem. Their traditional subsistence economies are intricately linked to the dynamics of the local forest, heavily relying on the seasonal collection of non-timber forest products (NTFPs) such as *Madhuca longifolia* (Mahua) flowers, Tendu leaves, and various wild edible plants (Ranbhaji). From a sociocultural perspective, their community structures are influenced by traditional clan lineages, conservation practices of sacred groves (Gao-Devi landscapes), and

distinctive customary governance systems like the Ghotul among the Madia, which collectively act as essential repositories for the preservation and intergenerational transmission of localized ecological knowledge.

Morphological investigation

Mahua (*Madhuca longifolia*) is a perennial tree that can reach heights of up to 70 feet. This tree starts to produce fruit between the ages of 8 and 15 years and can continue to bear fruit for as long as 60 years. It is classified as a medium to large deciduous tree characterized by a short, hollow, rounded crown that thrives in the green forest regions of India, typically at altitudes of up to 1,200 meters and heights ranging from 12 to 15 meters. The bark is rough, thick, and dark in color, exhibiting cracks and fissures. In contrast, the inner bark is a dark crimson hue and releases a milky white sap when cut. The leaves are elliptical, leathery on the underside, and hairy, measuring between 10 and 30 cm in length, with pointed tips and prominent veins. Additionally, the leaves can be described as elliptic or elliptic-oblong, ranging from 7.5 to 23 cm in length and 3.8 to 11.5 cm in width, featuring entire yet waxy margins, and are often fluorescent near the ends of the branches (Verma *et al.*, 2014). The flowers are small, aromatic, and fleshy, displaying a dull or light white color, and are arranged in distinct clusters at the ends of the branches. The fruits are oval-shaped, measuring 2 to 6 cm in length, fleshy, and greenish in color. The seeds are elongated, approximately 2 cm long, brown, and shiny (Akshatha *et al.*, 2013).

Flower Constituent

Mahua flowers are a rich source of sugars, which contribute to their sweet flavour and can be used to produce both traditional and contemporary alcoholic drinks. These flowers are also a significant source of Vitamin C, which plays a crucial role in their antioxidant properties (Indu and Annika 2014). Additionally, mahua flowers contain carotene, a precursor to Vitamin A. They are also rich in essential minerals such as Calcium and Phosphorus. Furthermore, mahua flowers contain small amounts of proteins and fats. A brief composition of mahua flowers is presented in Table 1.

Table 1: Mahua Flower Composition			
Sr. No.	Constituents	Fresh Flower	Dry Flower
1	Moisture	73.6-76.82 %	11.61-19.8 %
1	Ph.	4.6	---
1	Starch (g/100g)	0.94	---
1	Ash %	1.5	1.4-4.36

]	Total sugar (g/100g)	47.35-54.06	41.62
]	Total invert %	54.24	---
]	Cane sugar %	3.43	---
]	Reducing sugar (g/100g)	36.3-50.62	28.12
]	Protein %	6.05-6.37	5.62
]	Fat %	1.6	0.09-0.06
]	Fibre %	10.8	---
]	Calcium (mg/100g)	45	0.14-8
]	Phosphorus (mg/100g)	22	0.14-2
]	Carotene (mg/100g)	307	---
]	vitamin C (mg/100g)	40	7
[Source: Swain <i>et al.</i> , (2007); Hiwale, (2015); Patel <i>et al.</i> , (2011)]			

India is considered as a treasure of various medicinal and aromatic plant species which are being utilized since ancient time. Mahua is one of the naturally occurring plants which possess numerous health benefits. Tribal people use mahua flowers for curing of skin diseases, headache, pitta and bronchitis (Sinha *et al.*, 2017). Flower juice is supplemented to lactating women for augmentation of breast milk (Sunita and Sarojini 2013). Due to the availability for short time at limited places and highly perishable nature of this flower, it is not yet much explored by researchers and food processors except few for its value addition. Therefore, this research work has been designed in such a way to focus on recent advancement in utilization of mahua flowers as food and its future prospective regarding its value addition.

MATERIALS AND METHODS

Study Area and Selection of Field Sites:- The research was undertaken in specific tribal blocks located within the Gadchiroli district of Maharashtra, India. Geographically, Gadchiroli is situated between latitudes 18°43' N and 20°50' N, and longitudes 79°45' E and 80°53' E, covering a total area of 14,412 square kilometers. This region is characterized by a tropical wet and dry climate, with average annual rainfall varying from 1,200 mm to 1,500 mm, which supports the growth of dense tropical dry deciduous and moist deciduous forests. Fieldwork was meticulously conducted in three separate administrative blocks - Etapalli, Bhamragad, and Kurkheda, considering the high concentration of forest cover primarily composed of *Madhuca longifolia* and the significant demographic density of indigenous tribal communities (Madia Gond, Raj Gond, and Kanwar) who continue to practice traditional forest-gathering methods.

Field Survey and Informant Selection:- Field investigations were carried out throughout an entire seasonal harvest cycle of Mahua corollas from March to May for two years i.e. 2024

and 2025. A total of 120 key informants, ranging in age from 30 to 78 years, were chosen through a blend of purposive and snowball sampling methods. Particular attention was given to the recruitment of elder women, traditional community cooks, and traditional healers (Vaidyas or Pujaris), who serve as the primary guardians of domestic culinary and processing knowledge within the tribal ecosystem.

Data Collection and Participatory Documentation

Semi-Structured Interviews: In-person interviews were carried out in the local languages (Gondi and Madia, with the assistance of local bilingual translators) as well as in Marathi.

Participatory Kitchen Observations: The researcher engaged in and visually recorded active food preparation activities within tribal households. This engagement facilitated accurate verification of processing methods, encompassing temperature modifications, manual stamen extraction, and the proportions of additional wild forest ingredients used.

RESULT AND DISCUSSION

In the tribal-dominated ecosystem of the Gadchiroli district, *Madhuca longifolia* (locally known as *Mahua* or *Mahu*) serves as a vital socio-economic and nutritional lifeline. While widely recognized for its fermented beverage properties, the fresh and sun-dried corollas (fleshy flower petals) are fundamentally utilized as a staple food resource, particularly during lean agricultural periods (March to June).

The indigenous communities have developed specialized processing techniques to eliminate the strong volatile notes of the fresh flower while concentrating its natural sugars, minerals, and dietary fibers. Below is the primary ethnobotanical food preparations documented among the local tribes.

1. Mahua Ladoo / Mahua Gulgula (Nutritional Sweetmeat)

This preparation is highly valued for its long shelf life and acts as an energy-dense food for forest-goers and lactating mothers due to its high iron and carbohydrate content.

Processing Method: Freshly collected corollas are sun-dried on cleared forest floors or courtyards until moisture content drops significantly, causing them to turn a deep reddish-brown. The dried corollas are thoroughly washed to remove grit and then pounded using a traditional wooden mortar and pestle (*Ukhri*). The pounded, sticky mass is combined with roasted sesame seeds (*Sesamum indicum*), roasted groundnuts (*Arachis hypogaea*), or fried seeds of *Toli* (Mahua oilseeds). The mixture is tightly rolled into compact balls (*Ladoos*). In some parts of Gadchiroli, the dried corollas are boiled to extract a thick, sugary syrup. This

liquid is mixed with minor millet flour (like Kodo millet or Ragi) or wheat flour, shaped into small discs, and deep-fried in *Toli* oil.

2. Mahua-Kanjee / Mahua Pej (Gruel-based Staple)

A staple semi-liquid meal prepared daily during peak summer, providing both hydration and sustained caloric release for heavy physical labor.

Processing Method: Dried Mahua flowers are parboiled in water to induce swelling and soften the fibrous tissue. The water is often changed once during initial boiling to reduce the intense, characteristic aroma. Broken rice (*Kanki*) or coarse millets such as Kodo millet (*Paspalum scrobiculatum*) are added directly to the boiling Mahua corollas. The mixture is cooked until it forms a uniform, thick porridge. It is consumed warm or allowed to cool slightly, often accompanied by local wild leafy vegetables (*Ranbhaji*).

3. Mahua Sabji / Bhaji (Savoury Stir-fry)

A seasonal preparation using either freshly fallen green-white corollas or rehydrated dry corollas, consumed alongside flatbreads (*Bhakri*).

Processing Method: If using fresh flowers, the internal stamens are carefully removed manually, as they impart a bitter taste. The corollas are then blanched in boiling water containing a pinch of wood ash or salt, which neutralizes the acrid volatile compounds. The blanched flowers are squeezed dry and chopped. They are stir-fried in a small quantity of *Toli* or mustard oil, seasoned with locally collected wild chilis, garlic, and wild onions. In specific interior pockets of Bhamragagad and Etapalli, ground oilseeds or wild legumes are integrated to balance the sweetness with umami notes.

4. Mahua-Puri / Doonj Bhakri (Stuffed Flatbread)

A traditional festive recipe commonly prepared during local tribal festivals like *Gao-Devi* Pujas.

Processing Method: Dried flowers are soaked overnight in water to completely rehydrate. The plumped flowers are then ground into a smooth, thick paste without adding excess water. This sweet paste is kneaded directly into sorghum (*Jowar*) flour or rice flour to form a cohesive dough. Small portions are flattened by hand on a moistened leaf (frequently *Butea monosperma* or Palas leaves) and shallow-fried on a clay griddle (*Tawa*). The resulting flatbread is dense, naturally sweet, and highly portable.

CONCLUSION

The present study highlights the rich culinary heritage associated with Mahua (*Madhuca longifolia*) among the tribal communities of Gadchiroli district. The documented indigenous recipes demonstrate that Mahua is much more than a seasonal forest produce; it is an integral component of tribal food culture, traditional knowledge, nutrition, livelihood, and cultural identity. The preparation methods, preservation techniques, and customary uses of Mahua have been transmitted through generations, reflecting the close relationship between the tribal communities and their surrounding forest ecosystem.

The study further reveals that Mahua-based recipes represent sustainable food practices that utilize locally available natural resources with minimal environmental impact. These traditional foods not only provide nutritional value but also strengthen community bonds through their association with festivals, rituals, and seasonal celebrations. However, changing lifestyles, declining interest among younger generations, forest degradation, and commercialization pose significant challenges to the continuity of this valuable indigenous knowledge. Similar research has emphasized the importance of Mahua as a source of nutrition, livelihood, and value-added products for tribal communities, while also highlighting the need for sustainable utilization and documentation of traditional practices.

Therefore, there is an urgent need to systematically document, preserve, and promote Mahua-based indigenous recipes through community participation, academic research, and supportive government initiatives. Encouraging value addition, local entrepreneurship, and recognition of tribal culinary traditions can contribute to improved livelihoods while safeguarding this unique cultural heritage. Ultimately, preserving Mahua-based food knowledge is not merely an effort to conserve traditional recipes but also a step towards protecting indigenous wisdom, promoting biodiversity conservation, strengthening food security, and ensuring the sustainable development of tribal communities in Gadchiroli district.

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