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An Ethnographic Investigation of Medicinal Foods of Santal and the Role of Santal Women in Preserving Traditional Medical Knowledge System

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Santal, traditional knowledge, indigenous, ethnopharmacology, medicinal plant.

ABSTRACT
The Santal traditional knowledge system is deeply rooted in their connection to nature, cultural heritage, and community values. This knowledge exists across all domains of scientific disciplines like environment and ecology, agriculture, medicine, ethnopharmacology, etc. The Santal traditional knowledge system significantly impacts the social and economic aspects of Santal society. The present study was conducted in the village Kathikund in the Dumka district of Jharkhand in May during summer. The researcher has tried to document a few medicinal plants commonly used as medicinal food by the Santal people. Traditional medicinal system offers extensive documentation of the connection between food and medicine. The researcher observed medicinal herbs by participating in the kitchen garden, indicating an in-depth understanding of medicinal herbs from the kitchen garden. Local healers from the village were contacted to assist in identifying commonly used medicinal plant species in Kathikund. The main goal was to identify the commonly cultivated medicinal plant species in kitchen gardens and assess their medicinal properties and applications. The research employed standard ethnobotanical methods, including participant observation, free listing, interviews, and plant identification exercises. Santal women possess excellent knowledge in food processing and preservation to achieve adequate food supply for the family members. Among Santal, drumstick leaves (*moringa oleifera*) are consumed in their daily dietary form of soup, leaf mixed with pulses(dal), rice porridge, or it is observed dried chutney. During summer, Moringa oleifera leaves are dried and packed in a glass jar to use in their daily diet. It is observed that the Santal women are responsible for preserving the leaves of drumsticks as a source of food security for the household. Santal tribal women are totally dependent on natural resources available in their vicinity, and they try to utilize indigenous methods to obtain food ingredients. The researcher also collected herbarium specimens for fifteen medicinal plants identified and submitted at the Dept of Botany SKM University (Dumka).

Introduction

The traditional knowledge of the Santal people is an integral part of their being and identity. Throughout millennia, Indigenous peoples across the world have built, preserved, and adapted knowledge systems based on their direct engagement with biophysical and ecological processes, landscapes, ecosystems, and species. This knowledge is deeply influenced by mysticism, spiritualism, and different forms of animism (Atleo, 2011; Berkes 2018). The Santal people live in harmony with the natural environment, and their biological diversity is inseparable from their way of life. Notably, their traditional medicinal knowledge is deeply rooted in a strong belief in the efficacy of traditional medicine, supported by a rich pharmacopoeia. This study was conducted in the Dumka district of Jharkhand during May.

The researcher was on a short field visit to the village Kathikund, surrounded by dense forest ‘bir’, usually communicated in Santali. Every summer and winter break, the researcher usually visits her native place, and it is during this season that she often goes back to her fieldwork area and revisits from time to time so that she is well-connected and rooted with the villagers. This paper highlights the important learning outcome of the present research dealing with Santal people and natural resource management. The researcher has tried to document a few medicinal plants which are commonly used as medicinal food by the Santal people and can highlight a few points on how these medicinal species are procured from their surrounding environment and in what ways these medicinal foods are preserved. Santal is very fond of leafy vegetables. It is generally consumed in the form of medicinal food by the people. Therefore, the researcher identified the plant species

with the help of local healers and submitted the herbarium collection to the botany department at SKM University, Dumka. Indigenous knowledge refers to the unique traditional local knowledge of the Santal people, which has been practised orally for ages. The quantity and quality of Indigenous knowledge vary among communities. The Indigenous knowledge system has been embedded in their culture for ages, and ethnic people have tried to preserve it through practice. It is well expressed through their folklores, stories, myths, dances, songs, cultural values, proverbs, beliefs, rituals, customary laws, local languages, plant species, animal breeding, agricultural practices, and more (Louise Grenier, 1998).

An essential aspect of the Convention on Biological Diversity is respecting, preserving, and maintaining the knowledge, innovations, and practices of Indigenous and local communities that embody ethnic lifestyles. It also emphasizes promoting the broader application of this knowledge with the approval and involvement of its holders within society.

Indigenous knowledge prospers in the ethnic environment of any society, and it has a particular pattern that impacts the economic system. One of the forms of holistic and integrative knowledge systems is traditional knowledge. This knowledge grows rich in the lap of observation of the immediate environment. The experience of people's knowledge in dealing with the sustainability of the environment leads to the invention of the traditional or indigenous knowledge system. This knowledge is inbuilt and inherited by santal people from generation to generation. Traditional knowledge is well displayed in any tribal society by the dynamic roles of healers or herbalists. The focused area of traditional knowledge of study is more creative and approachable. It emphasizes the inner conviction of knowing certain things with the emotional conviction of understanding. The efficacy of traditional knowledge is achieved by pharmacological knowledge and practice. Traditional medicine focuses on healing practices, including the Santal belief system, usually connected with plant medicine. The branch of traditional knowledge is not codified but is usually transmitted verbally and sometimes in writing to preserve and annihilate the unevenness of physical and social well-being.

In Unani, Ayurvedic, and Chinese, food with healing properties is recognized and sought after in daily diets. This medical system advocates food to be used for purification, healing, and toning of the body, and it is done through strict prescriptions which need to be followed by every sick individual. The role of culture plays a crucial role in understanding how food is being culturally observed and perceived. Healing foods have the power to be eaten raw or cooked with other unique herbs, which maintain overall health in Santal culture. Santal people, with their age-old experience, have excellent knowledge of healing foods and have thoroughly learnt the basic form of preventive medicine traditionally used as a system of healing. Santal's traditional medical system views food as inseparable from medicine and regards medicinal foods as the first step of healing. Santal indigenous medical system believed that healing foods have the property to disinfect, cleanse and balance the body. They follow a rigorous nutritional diet plan when it comes to healing foods. Moringa oleifera is one of the healing foods of Santal culture, which is consumed in the form of a leafy vegetable. The decoction of Moringa leaves was taken daily on an empty stomach, which helped Santal people boost their immunity and fight against coronavirus during the pandemic. (Murmu and Joshi, 2023).

Essential factors of the Santal traditional knowledge system include agriculture and sustainability. Santal profoundly understands its local ecosystem and usually practices sustainable agriculture. They practice crop rotation and intercropping to maintain soil fertility and biodiversity. They are wholly dependent on the local resources for farming, and they ensure minimal environmental impact, thus maintaining sustainability. They are rich in traditional medical knowledge and use various medicinal plants to treat ailments. Santals are an excellent observer, and their ancestors carried the experiences of Ethnopharmacological knowledge to their generations. Herbal remedies and spiritual healing are vital in their healthcare system, especially in areas with limited access to modern medical facilities. Santal is also rich in arts and crafts. Their community produces traditional crafts such as terracotta arts, mud painting, weaving and wood carving. These crafts are expressions of their cultural identity and serve as an economic resource. Their music, dance, and storytelling preserve history and instil communal values while being economically significant in festivals and tourism. The santal have a customary, and they follow a community-based governance system known as Manjhi Pargana. This system resolves disputes, manages resources, and enforces cultural norms, promoting social harmony and collective responsibility. The researcher observed that Santal women possess excellent knowledge of agrofoods and their preservation, which reduces food insecurity in each household. In tribal and rural communities, it has been found that women folk play a significant role in taking responsibility for the family and providing each member with ample food. Santal women are found to be more active in preserving and processing food products in such a way that increases the production of vegetables, fruits, and milk. Women procure food items during times of abundance using Indigenous techniques such as fermentation drying, etc. All the Indigenous methods practised by tribal women have cultural significance and are economically applicable. The indigenous techniques include drying and boiling vegetables and grains

under the sun, frying, roasting, etc. Among Santal, drumstick leaves (*moringa oleifera*) are consumed in their daily dietary form of soup, leaf mixed with pulses(dal), rice porridge, or dried chutney. One of the crucial observations the researcher would like to mention here is that in Santal villages, Moringa oleifera leaves are dried in the sun during summer and preserved for future use. It is observed that the Santal women folk are responsible for preserving the leaves of drumsticks as a source of food security for the household. Research has shown that drumsticks are a significant source of many essential nutrients. It is found that the leaf extract of the drumstick plant is used as a preservative in many food packaging items. Santal uses it to increase the shelf life of meat through the oxidation method. Several studies have shown that the decoction of *moringa* leaves may help to lower sugar levels in the blood; therefore, it is observed by the researcher that Santals are found to consume *moringa* leaves in their daily diet.

Secondly, the twig of the Sal plant (*Shorea robusta) is* generally used as a toothbrush by the Santal people. They also use tender twigs of neem plant and twigs of (*Bassia latifolia)* (manhwa plant) to brush their teeth, which have anti-inflammatory properties. The Sal tree *(Shorea robusta*) is believed to be the "house of the tribal goddess" and is valued as a holy tree and worshipped in Santal culture. It has religious, medicinal, and commercial significance. Sal is generally used to prevent diarrhoea and dysentery due to its astringent properties. The women folk often make handmade biodegradable leaf plates from the leaves of the *Sal tree, which* are used by Santal people and commercially sold in the market. Nowadays, leaf plates are in demand in many social gatherings, especially at marriage functions and restaurants. These leaves are popularly used for serving food during any festive occasion, marriage, religious festivals, community feasts, etc. The leaves from various plants are used as dining Plates, steam cooking and food wrappers. Among santal, they use the leaves of the Sal tree to wrap marinated fish and meats in specially designed plates known as "patra" and for steam cooking. "Patra" is Santali's eating plate. They are prepared from Sal leaves *Shorea robusta* and made in a circular shape by jointing 6 to 8 (Sal leaves) *Shorea robusta* with the help of tiny wooden sticks or twigs. It is generally observed that Santal women often find joy and happiness when they sit together and weave "Patra" during the wedding or any religious ceremony. They love to sing while making the leaf plate; it gives them immense pleasure to smoke bidi while weaving "Patra". The Santal people used this practice extensively during ancient times for its purity. In Santal custom, prasad has always been offered to serve in "Patra" during religious ceremonies. Biodegradable plates provide several advantages, including being one of India's most environmentally friendly disposable food serving systems.

Methodology

Initially, the researcher conducted preliminary observations of medicinal herbs by participating in the kitchen garden of the Santal village. After thorough observation, the researcher exhibited confidence in identifying medicinal plants. The researcher also tried to crush a few herbs to check their medicinal properties by using sensory organs to identify them through organoleptic properties. The researcher is well versed in the Santali language, which helped her communicate well with Santal people. During the summer, the researcher investigated local medicinal plants in the village that Santal generally consumed as a healing food. She conducted interview sessions with fifty tribal women. The ultimate goal was to understand and learn about the medicinal uses of the most popularly used herbal plant species, which are grown in the kitchen garden of the Santal village. The researcher used participant observation to gather valuable information about their medicinal knowledge. The researcher also used herbarium collection to identify plant species of great importance in santal ethnopharmacopoeia. Local healers sought help to identify correctly the valuable medicinal plant species in the area of research in Kathikund.

During her fieldwork, when the researcher visited Santal's house, she saw leaves of certain plants lying on the mud floor under the sun for drying. The leaves are generally dried on a mat made from locally found date plants. After enquiry, she was told by the women healer that the plant is known as "matha arak" in Santali. The plant was identified as *Antidesma diandrum Roth*. is a small deciduous plant that was also grown in Santal village's kitchen garden. The fruiting season is between June and November, and the Santal people relish the tender leaves as saag. This plant's leaves are sun-dried during summer and stored for future use during the rainy season. This plant has medicinal properties and is rich in micronutrients. It is commonly applied during stomach aches, and the bitter quality of this plant proves to be a great source of relief for stomach aches among children. The leaves are boiled, and the decoction is given to children. In their daily diet, the leaves of *Antidesma diandrum Roth* are eaten like saag, a type of Santal cuisine where the leaves are cooked in firewood in terracotta vessels, which enhances its taste. It purifies blood. It is used as a diaphoretic (Laloo, et.al 2006).

In one of the focus group discussions, a few elderly women elaborated on their local cuisine. It is found that Santal generally eats meals of rice which are known as "dakka", dal (pulses), maize rice "jondra dakka", maize bread "jondra pitthe" millet bread "kode pitthe" millet porridge "kode dakka" rich number of leafy

vegetables which they call “uttu”. They are very much fond of fish curry, known as “haku uttu” chicken curry “sim gel uttu" and mutton curry which, is occasionally cooked during the festive time, known as "merom gel uttu". Santal's daily diet contains rice dal and leafy saag, either mixed in dal or eaten in roasted form. Santal is always fond of "arak," which consists of leaves, pot herbs, plants, bushes, and even trees that are eaten chiefly as curry. Some of these are cultivated, but most grow in the wild. “Munga arak”, the moringa oleifera plant, is commonly grown and found in every Santal house. The flowers are cooked as pakoda and used as curry. The leaves are used in the form of chutney and saag. The pods are cooked in a watery form and consumed with rice. Leaves are boiled, and the juice is used as a beverage among santal. It is believed to increase immunity and is used as a “kada” against cough and cold. My family generally consumed this form of “kada" during the pandemic. *Moringa oleifera* leaves are typically dried and stored for future use during a crisis. Secondly, when I further enquired about other plant species which are used in the form of medicinal food, “Bambaro arak", the Roselle plant (hibiscus sabdariffa L.), very commonly grown in the kitchen garden or field, found primarily in the winter season. The calyx of the *rosella* flower is used in the form of sweet chutney, and the calyx is also added to the ‘daal’ to give it a sour taste in their cuisine. It is found that *rosella species* is domesticated for its strong fibres, and it is well known for its edibility and medicinal properties; though the calyx is the most frequently used portion of the plant, the leaves and seeds are often made into salads, curries and potherbs. (UNICEF,2006). The calyx of the *Rosella* flower is rich in vitamins, natural carbohydrates, protein, tannins, gums and other antioxidants, including minerals (Okereke et al., 2015). The chemistry of the calyx revealed that per 100 g, it contained 49 calories, 84.5% water, 1.99 protein, 0.1 g fat, 12.3 g total carbohydrate, 2.3 g fibre, 1.2 g ash, 1.72 mg calcium, 57 mg phosphorus, 2.9 mg iron, 300 g vitamin A equivalent and 14mg ascorbic acid (Adegunloye et, al.1996). Santal also uses this plant variety in the form of medicinal food, which is consumed in the form of curry and chutney. The calyx of the *Rosella* flower is often preserved in the form of jam and is frequently used in the Santal diet. It is a rich source of multivitamins."But arak" the leaves of a gram, *Cicer arietinium L.* (boot) is used as curry. The leaves are dried, often added to the ‘daal’, and cooked. Every Santal relish it. It is highly nutritious and rich in iron.

The leaves of *Chenopodium album Linn*., a wild plant known as “Bhatuwa arak”, are used in curry and cultivated in the field and Santal's kitchen garden. This leafy vegetable plant, which has medicinal properties, is included in the diet for its rich minerals, fibres, vitamins, and essential fatty acid content and to boost strength and immunity. Customarily, it has been used as a blood purifier, diuretic, sedative, hepatoprotective agent, antiscorbutic, laxative, and anthelmintic against roundworms and hookworms. Pharmacological studies have shown that the plant exhibits anthelmintic, sperm-immobilizing, and contraceptive properties. It is also believed to have antipruritic and antinociceptive effects (Amrita & Ashutosh, 2015). The leaves and stems of the plant are cooked as curry or dried leafy half-boiled saag and consumed by the Santal family as a medicinal food. The leaves are generally dried and stored for future use. "Alu arak" is when potato leaves are used as curry, but on rare occasions. "Boebindi arak” *Randia dumentorum Lam*., a thorny tree, has leaves eaten in the curry, fruits eaten, and bark and roots used in Santal medicine. It is used to treat chronic dysentery. It treats common colds, chronic coughs, asthma and bronchitis. It also helps to stimulate our immune system and make our body cells capable of fighting against various serious infections. It is also skin-protective. (Abdullah-Al-Ragib et.al.,2017). “Hesak arak”, the tender leaves of Ficus religiosa L., are used in curry with dal; the tender leaves are boiled and then ground to make chutney; in my family, every spring season when the leaves are tender, we use to eat in the form of chutney it is believed to increase immunity. A few ethnomedicinal uses of *Ficus religiosa* possess numerous health benefits and are widely utilised to prepare various food products and herbal formulations. Traditionally, the bark of this plant is used as an antibacterial, antiprotozoal, astringent, and antidiarrhoeal in the treatment of gonorrhoea and ulcers, and the leaves are used for skin diseases. Some food products and herbal remedies are prepared using *F. religiosa* (Kumar et al.,2018). “Kantha arak” literally means carpet, a common wild plant that grows parallel to the ground, giving a carpet look. It is *Euphorbia granulate Forsk*. The leaves and the whole plant are crushed in a mortar before preparing the curry. Santal greatly relishes this. The above-mentioned leafy food items of medicinal importance are seasonally found and eaten, but moringa leaves are consumed daily according to Santal's taste buds. (Bodding,1986)

Conclusion

Santal tribal women are more empowered because they depend on natural resources and have access to and use their indigenous methods to procure food ingredients. Because they have immense knowledge about the food resources from the forest, they can thrive in scarcity situations. It concludes that traditional medicinal

practices embody indigenous culture, knowledge, and worldview. One can observe a fusion of therapeutic and pharmaceutical knowledge in most indigenous knowledge systems, which embraces a holistic worldview. Growing herbs commonly used to treat everyday ailments, such as coughs and colds, in kitchen gardens is a cost-effective investment in healthcare. It also serves as a counterbalance practice after migration, potentially demonstrating socio-ecological resilience. (Cocks & Dold, 2006; Buchman, 2006). Santal women also cultivate herbs in their kitchen gardens, readily available for daily consumption. Heckler (2004) also suggested that planting or raising new species of medicinal herbs in the kitchen garden is always believed to have existed through exchanging ideas and knowledge among various ethnic groups. Consequently, group gardening plays a role in shaping individuals' plant choices. It has also been observed that Santal women actively participate in workshops conducted by non-governmental organisations, exchanging ideas and sharing their traditional knowledge.

The Indigenous medical knowledge system has a vast potential to use medical knowledge in preventive and therapeutic ways. Here, the researchers would like to encourage more outreach programs to be conducted at regular intervals with the villagers so that they can be aware of how to promote their knowledge system. It could help entrepreneurs develop a joint venture with the local community to bring up the production of resources into a more refined system and achieve sustainable development goals. Hybrid technology (combining indigenous and foreign inputs) might yield a successful venture. Santal women are portrayed as being deeply connected to nature and more spiritual in their relationship with the environment. As a result, they are both victims of environmental degradation and key figures in promoting alternative models of sustainable development. The social status of Indigenous women is closely tied to their traditional roles as gatherers, agriculturalists, and healers—activities that involve the use and management of natural resources. It is not surprising, then, that environmental concerns are among the key issues they advocate for.

The researcher has observed that language has become a significant barrier in transacting the indigenous knowledge system. Language is a wheel that keeps us connected to the root. It is excruciating to see tribal people lose their connection because they are ashamed of speaking their mother tongue in public. Sanskritization has also led to the feeling of belittling one's identity with the outer world. When tribal people move in search of education, they disconnect themselves from their people, their community and their village. It is high time that Indigenous people realized their value and started promoting their knowledge system with pride and a sense of belongingness. Somewhere down the lane, Santal people have lost confidence in what their ancestors built in their culture, i.e., cultural identity is currently missing. Therefore, it is time people come together and celebrate the sense of belongingness, unity and connectedness Santal has lost somewhere.

Social effects of Santal indigenous knowledge include community cohesion. Traditional knowledge reinforces communal ties through shared practices, festivals, and rituals. It can be observed in the *Baha* and *Sohrae* festivals, among others. Until the Baha festival takes place, no Santal will gather the 'mahua' blossom *Bassia latifolia*, which provides them with both food and drink. During the Baha festival, Santal seems to forget all daily life's worries, stress and strains. On this occasion, people visit their relatives and friends and offer each other gifts. Their collective approach to farming, festivals, and decision-making fosters unity and cooperation among Santal.

Their knowledge system also includes preserving Santal identity, helping preserve their heritage against the homogenizing effects of modernization and urbanization. Traditional knowledge systems often define gender-specific roles in agriculture, craft-making, and rituals, providing a structure to their society. Economic effects of the Santal knowledge system can be observed in their agricultural practices which is the primary livelihood for Santals, and their sustainable practices contribute to food security for their communities. Traditional crafts also provide income, especially in markets where indigenous art is valued. Traditional Santal crafts and knowledge of herbal medicine have significant market potential. Integrating these with modern supply chains can boost their economic status. Festivals such as the '*Sohrae* and *Karma'* attract cultural tourism, providing opportunities for income generation through performances, craft sales, and showcasing traditional lifestyles. Market forces and modern agricultural methods sometimes erode traditional practices, leading to economic dependency and cultural dilution. Lack of intellectual property rights for their traditional knowledge can result in exploitation by external entities. Incorporating Santal Indigenous knowledge into mainstream development strategies can enhance resource management and rural development. Advocacy for the protection of their intellectual property rights is essential. The Santal traditional knowledge system is a repository of sustainable practices and cultural wealth. Its social impact lies in preserving community identity and harmony, while its economic potential can contribute to livelihoods and regional development. However, empowering the Santals through education, infrastructure, and legal protections is necessary to ensure that their knowledge system benefits both their community and society at large.

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