



INVESTIGATION ON THE TRADITIONAL KNOWLEDGE OF SOME EDIBLE LEAFY VEGETABLES CONSUMED BY THE ORAON TRIBES OF GUMLA DISTRICT, JHARKHAND, INDIA

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Abstract: The tribal people of Jharkhand mainly depend on leafy vegetables (LVs) as part of their traditional meals. The majority of rural communities in Jharkhand rely on plants and their parts to meet their daily needs, which has led to the development of specialized knowledge regarding their use. This study investigates the traditional knowledge of the Oraon tribes in the Gumla district of Jharkhand regarding the variety and application of LVs in daily life. There are 37 distinct herbs, shrubs, climbers, weeds, and tiny trees that belong to several families that have been identified. The majority of these plants can be consumed raw or after being properly processed as vegetables or medications. However, it has been discovered that overexploitation, unsustainable harvesting for food and medicine, and a number of other biotic interferences, including as grazing, herbivory, and man-made fires, have reduced the diversity of LVs in Jharkhand. To satisfy demand in the future, these special LVs must be conserved and utilized effectively. In addition, more investigation is necessary regarding the nutritional benefits and medicinal potentials of LVs, providing traditional meals and herbal medicines a solid basis in research.

Keywords: *Traditional knowledge, LVs, Nutrition, Medicine, Oraon tribe.*

I. INTRODUCTION

The majority of rural Indian populations (85%) use wild plants and their parts as traditional remedies and foods [1, 2]. Jharkhand's forests primarily consist of tropical deciduous vegetation with high species diversity [3]. With a substantial tribal population of 26.3%, comprising 32 tribes predominantly spread across 17 districts out of a total of 24, the state relies heavily on its forests and agriculture for sustenance [4, 5]. Indigenous communities in Jharkhand historically maintain a close bond with nature, harmonizing human life with the environment [6]. Their profound traditional knowledge regarding the usage of medicinal plants is well- documented and evident in numerous literary works [7, 8, 9]. Jharkhand, referred to as the 'Land of Forests' within India, is renowned for its abundance of medicinal plants and diverse tribal communities. Due to their close association with forest resources, tribal communities possess extensive knowledge of wild edible and non-edible plants, including the nutritious leafy greens known as 'Saag,' which they commonly incorporate into their daily diet [4, 10]. In Oraons/ kurukh, the 'saag' is commonly known as 'arxa'. Among the Oraon communities, Saag is consumed cooked or steamed together with rice and chapatti, while seasonal leafy vegetables are sun-dried, powdered, and stored for consumption during off-seasons. Studies have shown that leafy vegetables are rich in minerals and proteins [11]. To learn more about the potential of native leafy vegetables as future medications, more research is required, highlighting the importance of conservation. Sustainable exploitation of neglected green vegetables requires an integrated conservation approach that incorporates practices such as collaborative forest management, organic farming, and commercialization [12]. Such approaches can promote the health advantages of leafy greens while aiding in the preservation of indigenous knowledge and biodiversity. In order to mitigate the threat of malnutrition, a number of undiscovered leafy vegetables with hidden nutritional and therapeutic qualities must be commercialized. These vegetables are found in their native habitat. In addition to offering taste and diversity to our diet, leafy vegetables fulfill our daily needs for certain nutrients. They are known as 'poor man's vegetables' because of their easy accessibility and lower cost, making them an essential meal for rural and tribal communities [13]. They also sell these leafy veggies in the neighborhood market to improve their socioeconomic status. Unfortunately, while being a rich source of nutritional and medicinal properties, they are often considered lower-quality foods. Leafy vegetables are a great source of vitamins B, C, E, and K as well as minerals including iron, magnesium, calcium, and potassium [14]. Additionally, they include phytonutrients like Omega-3 fatty acids, lutein, beta-carotene, and zeaxanthin that shield cells from damage and age-related issues [14, 15]. They are rich in substances with anti-carcinogenic, anti-histaminic, and anti-diabetic effects [14, 16, 17, 18]. Green leafy vegetables include anti-oxidants that capture free radicals in our bodies, protecting against a range of ailments [14, 19]. Leafy vegetables have potential applications as superfoods and herbal medicines in the future due to their nutritional and medicinal qualities [14, 20]. The Gumla district of Jharkhand has a large variety of green vegetables, although scientific communities have not yet thoroughly investigated. Thus, the purpose of this research is to identify and collect a scientific record on leafy vegetables that could be found in the different blocks of the Gumla district.

II. METHODOLOGY

2.1 Study Area

The study was conducted in Gumla district of Jharkhand. It covers a total area of 1491 km². Abounding in natural beauty, the Gumla region is characterized by hills, rivers, and dense forests. It is situated in the southwest region of the Jharkhand State, with latitude and longitude ranging from 22' 35' to 23' 33' north and 84' 40' to 85' 1' east, respectively. Gumla is a town and subdivision located within Jharkhand's Gumla District. According to the census, Gumla has an overall population of 213,620 residents, with 157,119 residing in rural areas and 56,501 in urban areas. The overall literacy rate is 60.46%. The Gumla subdivision comprises nearly 107 villages. There is predominance of tribal people in Gumla district and about 68% of total population is of tribal communities. Hence, large no of population of this district depends on agriculture and forest products. District has twelve blocks namely Gumla, Sisai, Ghaghra, Verno, Palkot, Basia, Raidih, Kamdara, Bishunpur, Chainpur, Dumri and Jari.

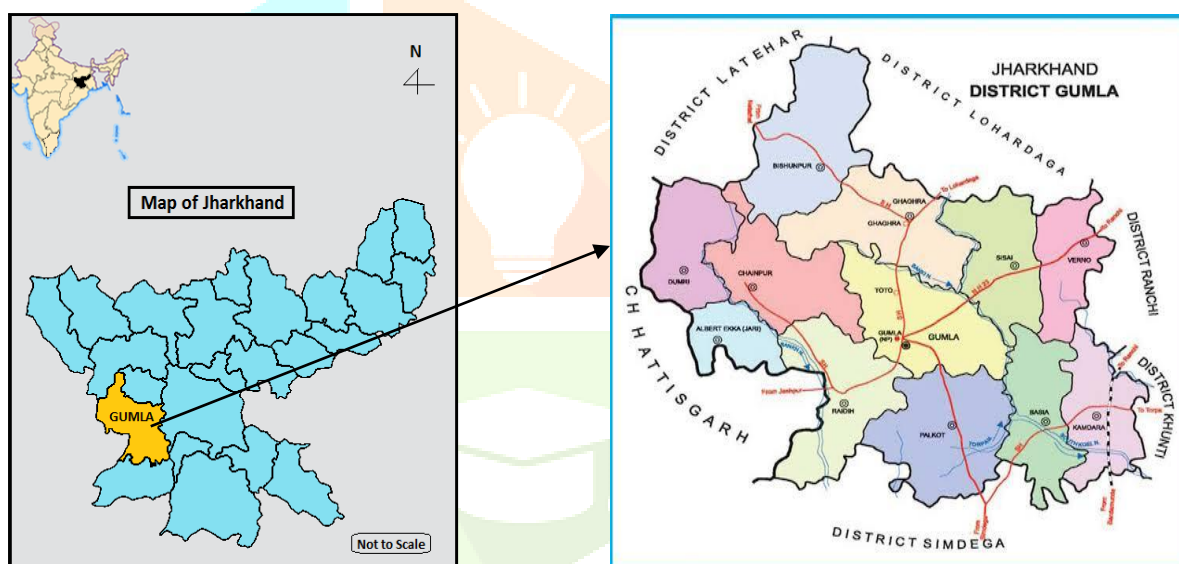


Figure 1: Map of the study area of Gumla district.

2.2 Data Collection

The research focused on investigating traditional knowledge within the Oraon communities residing in the Gumla district. Utilizing surveys, interviews, and fieldwork, the study engaged local Oraon individuals, referred to as 'Kurukhars,' who predominantly speak the 'Sadri' and 'Kurukh' languages [4]. Interviewees were drawn from various blocks within Gumla, and data were collected. Plant specimens were sourced from farms, cultivated lands, local markets, and home gardens. The majority of interviewees demonstrated fluency in both their mother tongue (Kurukh) and the local language, Hindi. Taxonomic experts and floras aided in the identification of collected specimens. The gathered data were carefully documented and tabulated, organizing them by botanical name, local name, oraon name,

family, edible parts and habit. Additionally, informal discussions and field excursions with key informants were conducted to deepen the understanding of traditional knowledge and the various species of wild edible plants found in the village vicinity.

III. RESULTS AND DISCUSSION

After interaction with Oraon tribals of Gumla district, total of 37LVs from 18 different families were found which was mainly consumed by them in their daily diet (Table 1). Out of 18 families, maximum were of Fabaceae family followed by Amaranthaceae, Brassicaceae and Apiaceae families (Figure 1). Mostly leaves are consumed followed by whole plants parts, young shoots and other plant parts like bulbs, tubers, roots, fruits and flowers (Figure 2). Out of total 37 plant species most of them were herbs (65%) followed by shrubs (16%) whereas climbers (11%) and trees (8%) were found to be the least (Figure 3). The species of edible LVs have been arranged alphabetically (Table 1). Botanical names of species have been mentioned followed by local name, Oraon name, family name, parts consumed and habit.

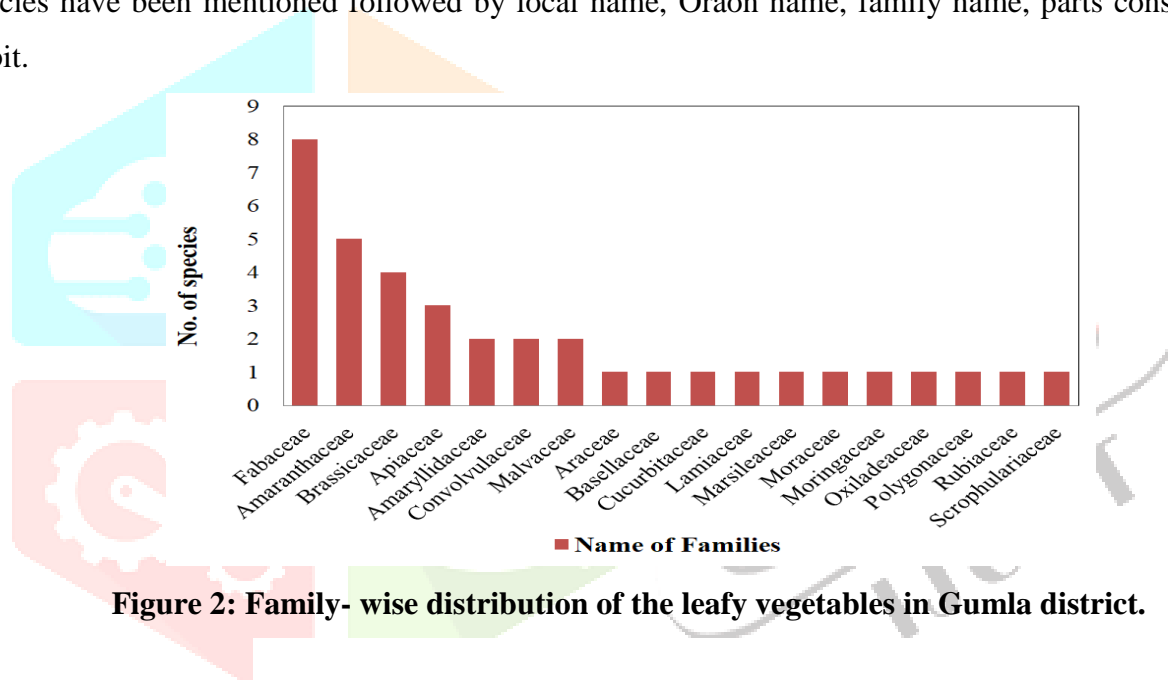


Figure 2: Family-wise distribution of the leafy vegetables in Gumla district.

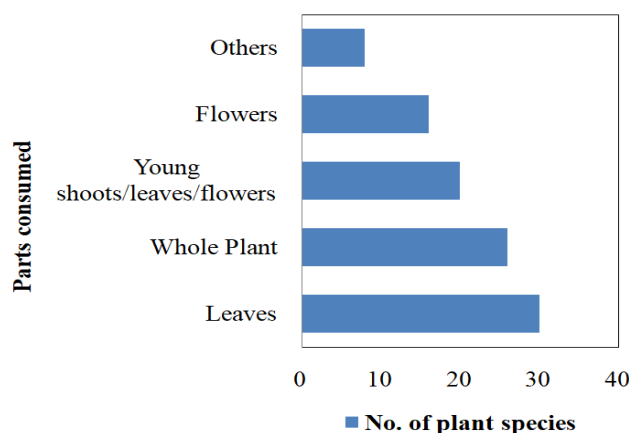


Figure 3: Distribution of plant parts consumed by the Oraon tribes in Gumla district.

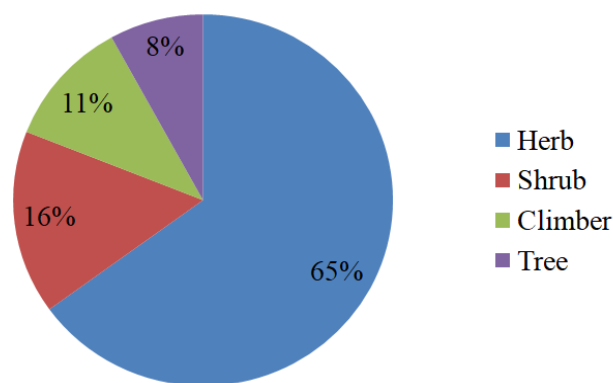


Figure 4: Habit-wise distribution of leafy vegetables in Gumla district.

Many rural parts of India are still dependent on agriculture for their day to day life. Oraon tribes are also one of them. Since LVs are easy to cultivate than any other vegetables, easily availability of wild edible LVs in forests, cost effective, nutritious and low maintenance in preserving for long time are some of the reasons why tribal mostly prefer LV as their food. Even name of the plants including LVs varies in different tribes and region to region as the names were kept depending on their looks, taste and characters such as *Amaranthus gangeticus* are called as ‘laal saag’ (vernacular name) and ‘henso bhaji arxa’ (oraon/kurukh name) due to its red color and *Centella asiatica* Linn. as ‘beng saag’ (Vernacular name) and ‘muha arxa’ (oraon/kurukh name) because of its resemblance with frog. Some LVs such as *Buhinia purpurea* L., *Cassia tora* L., *Centella asiatica* Linn., *Ficus geniculata* Kurz., *Marsilea quadrifolia* Linn., *Trigonella foenumgraecum* L. and *Moringa oelifera* Lam. are also used for the treatment of different ailments by the oraon tribes due to their medicinal properties.

IV. CONCLUSION

The Oraon tribe primarily depends on leafy vegetables (LVs) due to their ease of cultivation and rapid cooking time. This showcases the richness of the Oraon tribe's traditional knowledge, as some of the LV collected are unknown to non-tribal residents. These less well-known LV provide an abundance of medicinal value that can improve nutrition, food security, and medical care [21]. They are easier to cultivate compared to other vegetables and are quick and easy to cook. Some of the collected LV are still unknown to the majority of non-tribal locals and are not used by them in any form. These unknown leafy vegetables have great medicinal potential [9]. LVs have the potential to fulfill the demands of food and nutrition for the increasing population and also play a significant role in healthcare due to their medicinal properties. Therefore, it is important to acknowledge and secure this traditional knowledge of the Oraon tribe, and further nutritional studies are required on less-known species. The Oraon tribes, who mainly rely on agricultural and forest goods, depend on LVs for their livelihood. It has been suggested to promote LVs cultivation in kitchen gardens, highlighting its significance in maintaining tribal communities [10].

Table 1: List of edible LVs consumed by the Oraon tribes of Gumla district, Jharkhand

Sl. No.	Botanical Name	Local Name	Oraon Name	Family	Parts Consumed	Habit
1	<i>Allium cepa</i> L.	Pyaz saag	Pyaz arxa	Amaryllidaceae	Leaves, bulb	Herb
2	<i>Allium sativum</i> L.	Lahsun saag	Rasdi arxa	Amaryllidaceae	Young leaves, bulb	Herb
3	<i>Amaranthus gangeticus</i>	Laal saag	Henso bhaji arxa	Amaranthaceae	Leaves, Young shoots	Herb
4	<i>Amaranthus viridis</i> Linn.	Bhaji saag	Hariyar bhaji arxa	Amaranthaceae	Leaves	Herb
5	<i>Amorphophallus paeoniifolius</i> (Dennst.) Nicolson	Oal saag	Oal kanda	Araceae	Young leaves, tuber	Herb
6	<i>Anethum graveolens</i> Retz.	Soya saag	Kukdi arxa	Apiaceae	Leaves, Young shoots	Herb
7	<i>Basella alba</i> L.	Pui saag	Oatta arxa	Basellaceae	Leaves, Young shoots	Climber
8	<i>Brassica campestris</i>	Sarson saag	Mani arxa	Brassicaceae	Leaves	Shrub
9	<i>Brassica oleracea</i> L.	Gobi saag	Pholkubi	Brassicaceae	Whole plant	Herb
10	<i>Brassica oleracea</i> var. botrytis	Bandha saag	Potongkubi	Brassicaceae	Leaves, Flowers	Herb
11	<i>Buhinia purpurea</i> L.	Koinar saag	Komarxa	Fabaceae	Leaves, Flowers	Tree
12	<i>Cassia tora</i> L.	Chakod saag	Chakoda arxa	Fabaceae	Leaves	Herb
13	<i>Celosia argentea</i> L.	Silwary saag	Siliyari arxa	Amaranthaceae	Leaves, Young shoots	Herb
14	<i>Centella asiatica</i> Linn.	Beng saag	Muha arxa	Apiaceae	Whole plant	Herb
15	<i>Cicer arietinum</i>	Chana saag	Boont arxa	Fabaceae	Leaves	Herb
16	<i>Chenopodium album</i> Linn. Young	Bathua saag	Bhatua arxa	Amaranthaceae	whole plant/ Mature leaves	Herb
17	<i>Crotalaria juncea</i>	Sanai saag	San poonp	Fabaceae	Flower	Shrub
18	<i>Corchorus capsularis</i> L.	Chench saag	Chench arxa	Malvaceae	Leaves	Herb
19	<i>Coriandrum sativum</i> L.	Dhaniya saag	Dhaniya athha	Apiaceae	Whole plant	Herb
20	<i>Cucurbita pepo</i> L.	Konhra saag	Konhda arxa	Cucurbitaceae	Leaves, Flowers, Young shoots	Climber
21	<i>Ficus geniculata</i> Kurz.	Phutkal saag	Phutalngo arxa	Moraceae	Young leaves	Tree
22	<i>Hibiscus sabdariffa</i> L.	Kudrum saag	Thepa arxa/poonp	Malvaceae	Leaves, Flowers	Shrub
23	<i>Ipomoea aquatic</i> Forssk.	Karmi saag	Karni arxa	Convolvulaceae	Leaves	Shrub
24	<i>Ipomea batatas</i> (L.) Lam.	Kanda saag	Henso kanda arxa	Convolvulaceae	Leaves, tubers	Climber
25	<i>Indigofera tinctoria</i>	Jirhul saag	Khilbri poonp	Fabaceae	Flower	Shrub
26	<i>Lathyrus sativus</i> L.	Khesari saag	Khesra arxa	Fabaceae	Whole plant	Herb
27	<i>Limnophila conferta</i>	Muchri saag	Muchri arxa	Scrophulariaceae	Whole plant	Herb

	Benth.			e		
28	<i>Marsilea quadrifolia</i> Linn.	Sunsuniya saag	Sunsuniya arxa	Marsileaceae	Whole plant	Herb
29	<i>Mentha piperita</i>	Pudina saag	Fudna athha	Lamiaceae	Whole plant	Herb
30	<i>Moringa oelifera</i> Lam.	Munga saag	Munga arxa	Moringaceae	Leaves, flowers, fruits	Tree
31	<i>Oxalis corniculata</i> Linn	Netho saag	Bindo arxa	Oxiladeaceae	Leaves	Herb
32	<i>Polygonum plebeium</i> R. B	Chimti saag	Pok arxa	Polygonaceae	Whole plant	Herb
33	<i>Raphnus sativus</i> L.	Muli saag	Murai arxa	Brassicaceae	Leaves, tubers	Herb
34	<i>Spinacia oleracea</i> L.	Palak saag	Palak arxa	Amaranthaceae	Whole plant	Herb
35	<i>Trigonella foenumgraecum</i> L.	Methi saag	Methi arxa	Fabaceae	Whole plant	Herb
36	<i>Vangueria spinose</i> Roxb.	Katai saag	Sarla arxa	Rubiaceae	Leaves	Shrub
37	<i>Vicia hirsute</i> (L.) Gray.	Chirnji saag	Jhilo arxa	Fabaceae	Whole plant	Climber

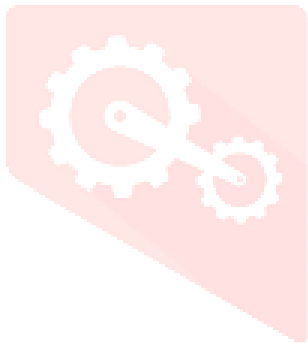
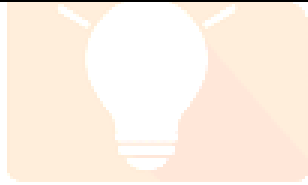




Figure 5: Photographs of leafy vegetables consumed by the Oraon tribes of Gumla district.

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