

## A Report on Wild Edible Fruits Used by the Tribal Communities Inhabiting Near Katepurna Wildlife Sanctuary, Maharashtra, India

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### ABSTRACT

Wild edible plants (WEPs) especially bearing edible fruits are considered as a rich source of nutrition for the aboriginal tribal and local communities residing in the forest catchment area since ancient time. The wild fruits are refreshing, delicious and cheap supplements of vitamins, minerals and proteins for the users. However, current scenario indicates that their use and knowledge is declining day by day. In this study, we reported wild edible fruits belonging to 26 angiospermic plants from 23 genera and 23 families from protected area of Katepurna wildlife sanctuary (MS) India. Of these identified wild edible fruit plants, 69% were trees, 23% were shrubs and 8% were climbers. Most of the fruits were eaten raw, some cooked and few were used to make pickles or chutney. Further, it was noted that most of these fruits were used by the tribals of this area for their ethnomedicinal potential. This knowledge about dual application of wild edible fruits should be preserve and utilize for the benefit of mankind.

**KEY WORDS:** WILD EDIBLE PLANTS, ETHNOMEDICINE, KATEPURNA WILDLIFE SANCTURY AND TRIBAL.

### INTRODUCTION

Wild edible plants (WEPs) are those plant species which are not cultivated or domesticated but could be accessible from various natural habitats and used as food (Beluhan and Ranogajec, 2010). It was estimated that, humans might have utilized more than 7000 WEPs globally (Grivetti and Ogle, 2002) but most of these remain under-utilized (Mohan Ram, 2000). In many developing

countries, WEPs produce specially fruits play a vital role in the livelihoods of Tribal and rural communities residing in forest catchments (Patole and Jain, 2002; Pundir and Singh, 2002). These plants serve as an alternative to staple foods during times of seasonal food scarcity and also could be used as valuable supplement for a nutritionally balanced diet. Currently, some Tribal and rural peoples use to sell these fruits in local market, providing a source of income for poor communities. Further, these species could be used as new potential sources for domestication (Prasad et al., 2003; Shrestha and Dhillon, 2006). Currently there is decline in the use of wild edible fruits by the native community people, (Mallick et al., 2017, Sardespande and Shalckleton, 2019).

This might erode the traditional knowledge about using these fruits as healthcare supplements. Therefore, present study was planned to focus on documentation of wild edible fruits/ fruit plants from Katepurna wild life

### ARTICLE INFORMATION

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sanctuary (KWS), Maharashtra, India. The most tribal populated villages near KWS are Kurankhed Dhotarkhed, Fetra, Kasmar, Vastapur, Deodari, Yedsi, Khopdi, Wai and Wagha. The total population of tribals in this area is about 12,000 (as per 2011 census) which is mostly depends on forest products for their livelihood.

The notified spread area of KWS is 73.69 Sq. km. which lies between the meridians of longitudes '77°7'41" and 77°12'36" East and between the parallels of latitude 19°22'14" and 19°29'77" North. It is situated in Akola District, West Vidarbha region of Maharashtra State, India (fig. 1). The climate is dry deciduous with an average

maximum temperature of 45 °C and minimum of 21 °C. The vegetation of the sanctuary is dry deciduous type, while the slopes have thickly forested dense vegetation patches harboring rich fauna. The Andh, Bhill, Pawra and Halba are the prominent Tribal communities inhabiting this forest catchment area. The study area was divided into five sub-centers and these sub-centers were visited twice a month post-monsoon to mid- summer during 2015 to 2018. To assess the traditional knowledge about WEPs, especially edible fruits, frequent interactions were made with the local Tribal experts and villagers, including farmers, shepherds, housewives and village heads.

Table 1. List of collected wild fruit plants from Katepurna wildlife sanctuary

| Sr. No. | Botanical Name of Plant                           | Local Vernacular Name | Family        |
|---------|---|-----------------------|---------------|
| 1       | <i>Aegle marmelos</i> (L.) Corr.                  | Bel                   | Rutaceae      |
| 2       | <i>Alangium salvifolium</i> (L.f.) wang, Engl.    | Ankol                 | Alangiaceae   |
| 3       | <i>Annona squamosa</i> L.                         | Sitaphal              | Annonaceae    |
| 4       | <i>Azadirachta indica</i> Juss.                   | Neem                  | Meliaceae     |
| 5       | <i>Buchanania cochinchinensis</i> (Lour.) Almeida | Charoli               | Anacardiaceae |
| 6       | <i>Capparis spinosa</i> L.                        | Kabar/ Kalavari       | Capparaceae   |
| 7       | <i>Capparis decidua</i> (Forssk.) Edgew.          | Nepti/ Karel          | Capparaceae   |
| 8       | <i>Canthium coromandelium</i> (N.Burm.) Alst      | Kirma                 | Rubiaceae     |
| 9       | <i>Carissa carandus</i> L. Mant.                  | Karavand              | Apocyanaceae  |
| 10      | <i>Celastrus paniculatus</i> Willd                | Kanguni               | Celastraceae  |
| 11      | <i>Cordia dichotoma</i> Forst. f.                 | Bhokar                | Boraginaceae  |
| 12      | <i>Diospyros peregrine</i> L.                     | Tembruni              | Ebnaceae      |
| 13      | <i>Emblica officinalis</i> Gaertn. Fruct.         | Awala                 | Euphorbiaceae |
| 14      | <i>Erythrina variegata</i> L.                     | Pangara               | Fabaceae      |
| 15      | <i>Ficus recemosa</i> L.                          | Umber                 | Moraceae      |
| 16      | <i>Garcinia indica</i> (Thou.) Chois.             | Ratamba               | Clusiaceae    |
| 17      | <i>Grewia tiliifolia</i> Vahl, Symb               | Dhaman                | Tiliaceae     |
| 18      | <i>Momordica dioeca</i> Roxb.ex Willd.            | Kartuli               | Cucurbitaceae |
| 19      | <i>Semicarpus anacardium</i> L.                   | Biba                  | Anacardiaceae |
| 20      | <i>Sterculia foetida</i> L.                       | Goldaru               | Sterculiaceae |
| 21      | <i>Syzygium cumini</i> L.                         | Jambhul               | Myrtaceae     |
| 22      | <i>Terminalia bellirica</i> (Gaertn) Roxb.        | Behda                 | Combretaceae  |
| 23      | <i>Terminalia chebula</i> Retz.                   | Hirda                 | Combretaceae  |
| 24      | <i>Trichosanthes tricuspidata</i> Lour.Fl.        | Kaundal               | Cucurbitaceae |
| 25      | <i>Ziziphus mauritiana</i> L.                     | Bor                   | Rhamnaceae    |
| 26      | <i>Ziziphus rugosa</i> Lamk.                      | Yeruni                | Rhamnaceae    |

Table 2. Edible/ medicinal uses of the fruits collected from Katepurna wildlife Sanctuary

| Sr. No. | Name of Plant                                  | Edible uses  | Medicinal uses  |
|---------|--|--|---|
| 1       | <i>Aegle marmelos</i> (L.) Corr.               | The mature ripe fruit is eaten raw, also made into pickle. | The fruit pulp is digestive, also used to cure diarrhoea, dysentery and peptic ulcers.  |
| 2       | <i>Alangium salvifolium</i> (L.f.) wang, Engl. | The ripe fruits eaten raw.                                 | The fruit is said to have aphrodisiac, carminative and expectorant properties. It is also used locally as antidote for scorpion and snake bite. |

Continue Table 2

|    |   |  |  |
|----|---|--|--|
| 3  | <i>Annona squamosa</i> L.                         | The mature ripe fruits eaten raw for taste and nutrition.  | The fruit is used as antidiabetic , anti-inflammatory and anti-tumor activity.   |
| 4  | <i>Azadirachta indica</i> Juss.                   | The fruits are eaten raw or cooked, sometimes made into lemonade.  | The seed oil is used as antiseptic agent and for its microcidal property.  |
| 5  | <i>Buchanania cochinchinensis</i> (Lour.) Almeida | Fruits are eaten fresh, dried fruits are also eaten and used for other purposes. The seeds are used as condiment in different sweet recipes. | The fruits are used to treat cough and asthma.   |
| 6  | <i>Capparis spinosa</i> L.                        | The fruits are used as condiments in vegetables and pickles.   | Fruits are used against rheumatic pain, gout.  |
| 7  | <i>Capparis decidua</i> (Forssk.) Edgew.          | Unripe fruits eaten raw after cooking; ripe fruits eaten raw without cooking.  | The fruit is given to treat rheumatic pain.  |
| 8  | <i>Canthium coromandelium</i> (N.Burm.) Alst      | The fruits are eaten raw or cooked.  | The fruits are given to small children to remove intestinal worms  |
| 9  | <i>Carissa carandas</i> L. Mant.                  | Raw fresh fruits eaten to strengthen cardiac muscles.  | The fresh fruit is also used to prepare pickles. The fresh fruit juice is use to improve appetite and digestion.   |
| 10 | <i>Celastrus paniculatus</i> Willd.               | Young fresh fruits are eaten raw.  | The seed oil is used as. brain tonic by tribals<br>The dried seed powder is given with milk to improve the conditions like memory loss and dementia.                             |
| 11 | <i>Cordia dichotoma</i> Foret. f.                 | The fresh fruits eaten either raw or cooked, sweet in taste. Immature fruits use to prepare pickles.   | The fresh fruits are fleshy and used as demulcent and laxative. Their paste also been use to recover skin eruptions.   |
| 12 | <i>Diospyros peregrine</i> L.                     | Ripe fruits eaten raw for taste and nutrition.   | The locals use the fruits as anticold, astringent and anthelmintic.  |
| 13 | <i>Emblica officinalis</i> Gaertn. Fruct.         | Mature fruits are eaten raw. Fruits are also made into pickle or murraba.  | The fruits are said to have antioxidant, anti-inflammatory and antiulcer activities.   |
| 14 | <i>Erythrina variegata</i> L.                     | Roasted fruit seeds eaten.   | The boiled water with fruits/ seeds of the plant is considered as antidote against snakebite.  |
| 15 | <i>Ficus recemosa</i> L.                          | Ripe fruits, sweet, eaten raw; sometimes made into pickle.   | The fruits used as astringent and also in treatment of menorrhagia.  |
| 16 | <i>Garcinia indica</i> (Thou.) Chois.             | The fresh fruits eaten raw and made into sherbet of mature fruits.   | The fruit juice is use to recover sunstrokes ( cooant). Fresh juice is use to treat constipation. The fruit is also considered as anticancer, antidiabetic and anti-ulcer agent. |
| 17 | <i>Grewia tiliifolia</i> Vahl, Symb               | The fruits are having good flavour, use to eat raw by the tribals.   | Traditionally it is used as good source of natural antioxidant.  |

Continue Table 2

|    |  |  |  |
|----|--|--|--|
| 18 | <i>Momordica dioeca</i> Roxb.ex Willd.     | The fresh fruits used as vegetables.   | The fruit is said to regulate blood pressure and reduce hypertension. respiratory disorders, reduce weight. also suggested that it works against cancer and diabetes |
| 19 | <i>Semicarpus anacardium</i> L.            | The mature fruits are eaten raw.   | The fruit extract said to have anti-inflammatory, antioxidant and antimicrobial  |
| 20 | <i>Sterculia foetida</i> L.                | The seeds roasted and eaten raw.   | The fruit and seeds are said to have laxative property.  |
| 21 | <i>Syzygium cumini</i> L.                  | The seeds are with unique taste, eaten raw.  | The tribals use these fruits as best anti-diabetic agent and natural blood purifier.   |
| 22 | <i>Terminalia bellirica</i> (Gaertn) Roxb. | The dried fruit seeds are eaten raw.   | The fruit and fruit oil have anthelmintic, astringent, digestive and tonic.  |
| 23 | <i>Terminalia chebula</i> Retz.            | Green as well as mature dry fruits are eaten raw.  | The fruit is digestive in nature. The fruit powder along with honey is given to improve appetite and cure cough and cold.  |
| 24 | <i>Trichosanthes tricuspidata</i> Lour.Fl. | The fresh fruits mostly eaten raw.   | The fruits have laxative property. It also have antimicrobial use. The soup prepared from fruit pulp cures cold and fever.   |
| 25 | <i>Ziziphus mauritiana</i> L.              | The fresh mature fruits are eaten raw for taste. Dried fruits boiled and added with salt also eaten as food. | The fruits given to increase muscular strength, prevent liver and bladder diseases. Fruit powder is given to cure constipation.                                      |
| 26 | <i>Zizipus rugosa</i> Lamk.                | The fresh mature and ripe fruits eaten raw   | The fruits are used to improve digestion. It also used as liver tonic.   |

Figure 1

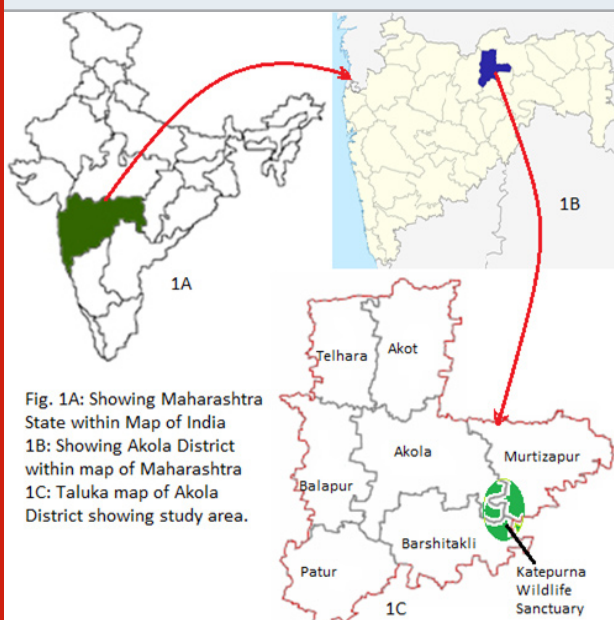
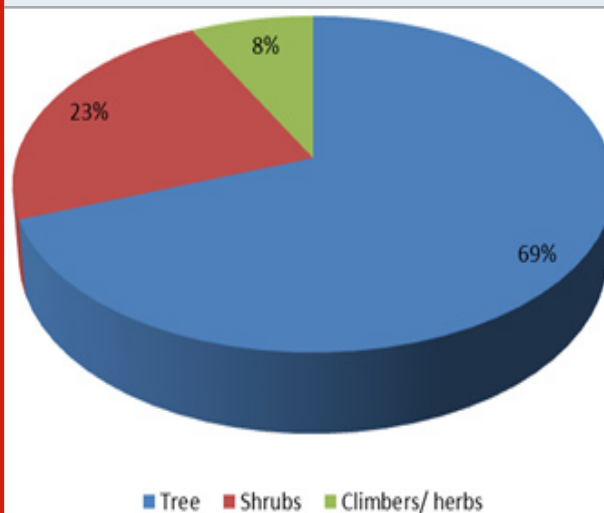


Figure 2: Percentage occurrence of habits of edible fruit producing plants



In total 18 informants were interviewed regarding their knowledge about use of wild fruits available in the sanctuary area. Of these informants, 4 were housewives, 3 were Tribal healers (Vaidoo's from Angh, Pawra and Bhil communities), 4 were village heads who were practicing herbal medicine, 3 were old age farmers and 4 were shepherds. All the informants were aging more than 60 years except the shepherds with age ranging from 30 to 40 years. Live specimens and available photographs were shown to them for local identification. The fruits were preserved and identified with the help of available literature and floras (Naik, 1998; Singh and Karthikeyan, 2000; Singh et al., 2001; Yadav and Sardesai, 2002) and specimens were deposited in Department of Botany, Shri Shivaji College of Arts, Commerce and Science, Akola (MS) India.

The fruits WEPs used by the Tribal communities and local villagers residing in the vicinity of Katepurna wild life sanctuary were collected, identified and documented (table-1). In total 26 WEPs whose fruits were edible, were collected and identified during the study. They are presented here with their local name, botanical name along with family to which they belongs. The collected material belongs to 23 genera and 23 angiospermic families with 69% trees, 23% shrubs and 8% climbers (Fig. 2). In the modern era of urbanization and industrialization, only few peoples from different Tribal communities in the area, along with mostly elderly villagers were only noted to use these fruits seasonally in their diet indicating their declining use. Apart from the edible use, the collected plant fruits also have some medicinal properties. Most of the fruits reported here in this paper are eaten raw or cooked. Some of them use to make pickles. During the survey, it was also noted that, these fruits were also used for their medicinal potential (table- 2). Of the collected fruits, 4 were used to improve digestion, 4 were as anti-diabetic agents, 3 as anticancer agents, 3 as anti-inflammatory, 3 as antioxidants, 3 as antimicrobial agents; 2 for ulcer healing properties and rheumatism curing agents. The details are presented in table 2.

Earlier, Barua et al., (2000) investigated wild edible plants from Majuli Island and Darang District of Assam. A similar report was made by Rajasab and Isaq (2004) from north Karnataka. Aberoumand and Deokule (2008) had reported edible fruits from Iran and India. Bhogaonkar and Marathe (2010) studied the wild edible plants from Melghat forest, Amravati District (MS). Reddy (2011) made similar report from Chandrapur District, Setiya et al., (2016) from the Gadchiroli District (MS) and Mondaragi et al., (2017) from the Southern Western Ghat of India. All these reports indicate that Tribal communities and local people use the WEPs or plant parts including fruits as nutritional supplements.

We argue that this is probably a nutraceutical approach of different tribal communities to maintain good health (Pushphagadan, 2000; Sardespande and Shalckleton, 2019), which is now a days observed to be declining alongside new assess to foods, markets and urbanization.

Most of these wild edible fruits are rich in nutrients and minerals promoting their use in traditional medicine (Rothe, 2003; Kamble et al., 2010; Bhatia et al., 2018). Further, these plants could play vital role in eradication of poverty by generation of income resources, availability of food and diversification of agriculture (Thakur et al. 2017 and Bhatia et al. 2018). Our report is in analogy with earlier reports indicating that the Tribal communities in the vicinity of Katepurna wildlife sanctuary frequently use the fruits of WEPs as supplementary nutrition rich food or medicinal component. However, further study can validate each wild fruit for essential nutrients and minerals. These underexplored wild fruits have to be researched and conserved in natural habitats and if it will be possible, cultivate some of them for food security in future.

**Author Contributions:** RPS has surveyed the study area seasonally during 2015 to 2018 and also done the interview with local herbal healers. She has prepared initial draft of the manuscript. Later along with DKK she has finalized manuscript, interpreted and presented data after analysis to present form.

**Conflict of Interest:** Authors declared that there is no conflict of interest.

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