Journal of Ayurvedic and Herbal Medicine

***Research Article***

ISSN: 2454-5023
J. Ayu. Herb. Med.
2017; 3(4): 205-209

www.ayurvedjournal.com
Received: 02-10-2017
Accepted: 23-11-2017

# The Wiled RET edible plants consumed by the Irula tribals of Walayar valley, Southern Western Ghats of India

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## ABSTRACT

The present study is aimed to know the RET wild edible plants consumed by the Irula tribals of Walayar valley, Southern Western Ghats of India. The study was carried out during 2015 - 2016. A total number of 51 species in 38 genus belongs to 32 families of wild edible plants were enlisted during the survey. The information about each plant the local name of the plant, parts used, mode of use and medicinal uses are documented in separated filed data sheet. Among them 14 plant species are coming under IUCN red listed category. They have a very good knowledge of wild edible plants in their surrounding forest. Plants parts are mostly consumed as direct food. Our study revealed that the Adivasi community in the Walayar Valley continues to have and use the knowledge about the wild edible plants, including their habitat, collection period, sustainable collection, mode of preparation and consumption. To date, this knowledge appears to be fairly well conserved and used as a result of continued reliance of local community on the wild uncultivated foods.

**Keywords:** RET Plants, Wiled Edible Plants, Irula tribes, Walayar valley, Western Ghats, India.

## INTRODUCTION

Consuming wild edibles is part of the food habits of people in many societies and intimately connected to virtually all aspects of their socio-cultural, spiritual life and health [1]. It also plays a major role in meeting the nutritional requirement of the tribal population in remote parts of the country throughout year [2-9]. Wild food plants play a very important role in the livelihoods of rural communities as an integral part of the subsistence strategy of people in many developing countries [10]. India is one of the second largest human populations in this planet 75% of the population is living in the rural areas. Most rural communities depend on the wild resources including wild edible plants to meet their food needs in periods of food crises, as well as for additional food supplements [11]. It is estimated that in India about 800 species are consumed as food plants, chiefly by the tribal inhabitants [12]. Wild plants have since ancient times, played a very important role in human life; they have been used for food, medicines, fiber and other purposes and also as fodder for domestic animals.

In search for wild edible food plants many of which are potentially valuable for human being has been identified to maintain a balance between population growth and agricultural productivity, particularly in the developing countries [13]. Nutritional analysis of some wild edible plants demonstrates that in many cases the nutritional quality of wild plants is comparable and in some cases they are superior to domesticated varieties [14-16]. Many wild plant species are believed to possess edible value and not documented yet [17-19]. So, there is an urgent need to explore, analyze and document the wild foods consumed by the Irula tribal communities in Walayar valley, Southern Western Ghats of Tamil Nadu, India.

## MATERIALS AND METHODS

### Study Area

The study area, Walayar valley spreads over an area of ca.256 Km2 lieing between 10°50'18" and 10°50'21"N and 76°51'20" and 76°51'22"E (Fig. 1). Temperature in the year is ranging between 28 (January) and 38°C (April). The mean annual rainfall for the past 15 years is 1614mm. The soil is sandy loam with the acidic pH of 6.5. Moist evergreen forest is the predominant vegetation type in this area. The Irula tribals altogether with the population of ca.350 have been sheltering in 5 hamlets situated inside the forest. Apart from minor forest produce collection, they have engaged as agricultural labours and casual labours in forest department activities.

### Data collection

The field survey was conducted in all the five Irula tribal habitations of Walayar valley for 10 months from

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March, 2015 to December, 2016. For the interview, 20 herbalist healers were approached with questionnaire items which include healer's age, their experience as healers and medicinal plants used for various ailments. The vernacular names in Tamil for the medicinal plants used by the healers and households were recorded. For documenting the ethnobotanical information, field data sheet has been prepared and used. All the plants collected were deposited as herbarium in the Botany Department of Kongunadu Arts and Science College, Coimbatore. For all the specimens, the voucher numbers were given and they were botanically identified with the help of 'The Flora of the Presidency of Madras' [20] and 'Flora of Tamil Nadu Carnatic' [21].

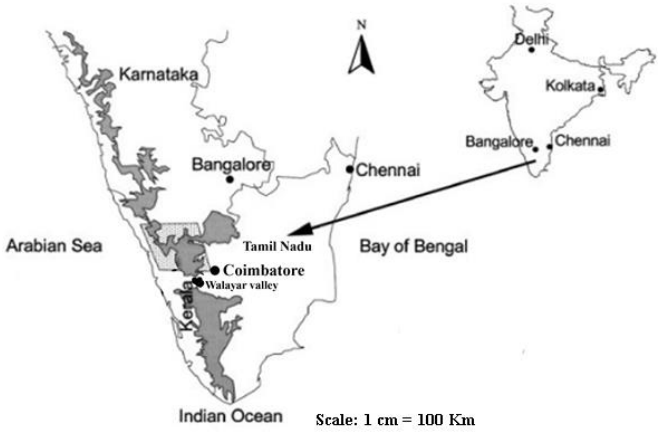


**Figure 1:** Location of study area, the Walayar valley.

## RESULTS

The result shows that, Irula tribes of Walayar Valley possess a very good knowledge on the wild edible plants found around the forest areas. A total of 51 plants species from 37 genera and 32 families have been recorded as wild edible plants in the study areas. In the present study, about 51 wild edible plants have been enumerated, among them 10 are herbs, 8 shrubs, 12 climbers and 21 trees (Fig. 2). Among the 51 species 14 plant species are coming under IUCN red listed category *viz.,* Least Concerned (1 species), Threatened (1 species), Vulnerable (4 species), Endangered (3 species) and Endemic (5 species). Of which, fruits ranked first with 27 species, leafy vegetable 7 species, plants as substitute for salt 2 species, tubers and rhizome 9 species and seed plants 6 species. Among the 32 families, the most widely utilized species is Dioscoreaceae (5 species) followed by Amaranthaceae and Euphorbiaceae (4 species each), Rosaceae (3 species) and the remaining families were represented by one or two species each.

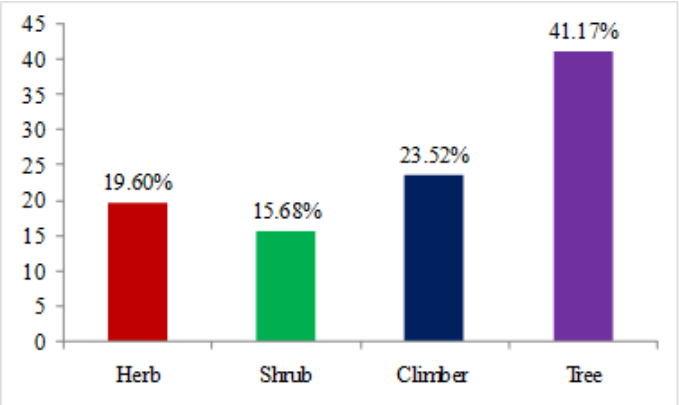


**Figure 2:** The percent life form of wild edible plants used by the Irula tribals of Walayar valley, southern Western Ghats of Tamil Nadu.

**Enumeration**

**Fruit plants**

The edible portions are fleshy pericarp, arils or mucilaginous substance associated with seeds.

**Scientific name:** *Aglaia perviridis* Hiern.
**Local name:** Cheruchokla
**Family:** Meliaceae
**Mode of use:** Rind of the ripe fruit is split open and mucilaginous pulp inside the rind is consumed, taste is sweet.
**IUCN category:** Vulnerable

**Scientific name:** *Alangium salviifolium* (L.f.) Wang.
**Local name:** Alangi
**Family:** Alangiaceae
**Mode of use:** The ripe fruit pulp is consumed, taste is sweet.
**IUCN category:** Nil

**Scientific name:** *Antidesma menasu* (Tul.) Muell.-Arg.
**Local name:** Pali eechi
**Family:** Euphorbiaceae
**Mode of use:** Fleshy pericarps are separated from seeds and consumed; tastes sour.
**IUCN category:** Vulnerable

**Scientific name:** *Aporosa lindleyana* (Wight) Baill.
**Local name:** Vettil
**Family:** Euphorbiaceae
**Mode of use:** The seeds with fleshy arils are separated from mature fruits and consumed. Arils are sweet and sour in taste.
**IUCN category:** Vulnerable

**Scientific name:** *Aporosa acuminata* Thw.
**Local name:** Vetti
**Family:** Euphorbiaceae
**Mode of use:** Capsules are split open and seeds with fleshy arils are separated and eaten; taste like the aril of *Aporosa lindleyana*, sweet and sour.
**IUCN category:** Vulnerable

**Scientific name:** *Baccaurea courtallensis* (Wight) Muell.-Arg.
**Local name:** Moottilpuli
**Family:** Euphorbiaceae
**Mode of use:** Capsules are split open and the arillate seeds are taken out; arils are eaten and seeds are spitten off; taste is sour.
**IUCN category:** Endemic

**Scientific name:** *Coccinia grandis* (L.) Voigt.
**Local name:** Kovai palam
**Family:** Cucurbitaceae
**Mode of use:** Unripe fruits are taken as such or cooked and consumed as vegetable.
**IUCN category:** Nil

**Scientific name:** *Elaeocarpus serratus* L.
**Local name:** Karakka
**Family:** Elaeocarpaceae
**Mode of use:** Semifleshy pericarp is eaten, in sweet taste.
**IUCN category:** Least Concerned

**Scientific name:** *Flacourtia montana* Grah.
**Local name:** Charalpazham
**Family:** Flacourtiaceae

**Mode of use:** Fleshy fruit portion is consumed either with or without seeds; taste is sour.
**IUCN category:** Endemic

**Scientific name:** *Glycosmis pentaphylla* (Retz.) DC.
**Local name:** Kulu Pannai
**Family:** Rutaceae
**Mode of use:** Pulpy and juicy pericarp is consumed. It is slightly sweet in taste.
**IUCN category:** Nil

**Scientific name:** *Hibiscus sabdariffa* L.
**Local name:** Simaikkasuru
**Family:** Malvaceae
**Mode of use:** Mature epicalices and calices are eaten as such; or juice extracted is used while preparing fish curries or as a substitute for tamarind.
**IUCN category:** Nil

**Scientific name:** *Madhuca longifolia* (Koen.) Macbr.
**Local name:** Illuppa
**Family:** Sapotaceae
**Mode of use:** Somewhat soft pericarp of the ripened fruit is separated from seeds and pieces are consumed. It tastes very sweet.
**IUCN category:** Nil

**Scientific name:** *Merremia vitifolia* (Burm.f.) Hall.f.
**Local name:** Manja kolambi valli
**Family:** Convolvulaceae
**Mode of use:** The immature, unripe fruits are chewed.
**IUCN category:** Nil

**Scientific name:** *Momordica charantia* L.
**Local name:** Kattupavai
**Family:** Cucurbitaceae
**Mode of use:** Unripe fruits are cooked, used as vegetable or used in making dishes.
**IUCN category:** Nil

**Scientific name:** *Passiflora foetida* L.
**Local name:** Poochappazham
**Family:** Passifloraceae
**Mode of use:** Rind of the fruit is split open and the pulpy and juicy substance containing aril and placenta is swallowed. It tastes sweet.
**IUCN category:** Nil

**Scientific name:** *Phoenix sylvestris* Kunth.
**Local name:** Seemarpul
**Family:** Arecaceae
**Mode of use:** Fleshy pericarp of the ripe fruits is chewed and seeds are spitten off. It tastes sweet.
**IUCN category:** Threatened

**Scientific name:** *Physalis minima* L.
**Local name:** Kupanti
**Family:** Solanaceae
**Mode of use:** Ripe berries are separated from inflatted calices and eaten as such. It is slightly sweet and sour in taste.
**IUCN category:** Nil

**Scientific name:** *Rubus ellipticus* L.
**Local name:** Mullippazham
**Family:** Rosaceae
**Mode of use:** Fruits are eaten, the taste is sour.
**IUCN category:** Nil

**Scientific name:** *Rubus glomeratus* Bl.
**Local name:** Kattumunthiri
**Family:** Rosaceae
**Mode of use:** Fruits are eaten, the taste is sour.
**IUCN category:** Nil

**Scientific name:** *Rubus niveus* Wall.
**Local name:** Karimcheechi
**Family:** Rosaceae
**Mode of use:** Fruits are eaten, the taste is sour.
**IUCN category:** Nil

**Scientific name:** *Salacia fruticosa* Heyne ex Lawson.
**Local name:** Ponkarandi
**Family:** Hippocrateaceae
**Mode of use:** Rind of the fruits is consumed, it is sweet in taste.
**IUCN category:** Endemic

**Scientific name:** *Schleichera oleosa* (Lour.) Oken.
**Local name:** Karanachi
**Family:** Sapindaceae
**Mode of use:** Rind of the fruit is broken open and pulp inside the rind is consumed. It is slightly sweet in taste.
**IUCN category:** Nil

**Scientific name:** *Solanum torvum* Sw.
**Local name:** Sundaikkai
**Family:** Solanaceae
**Mode of use:** Unripe fruits are plucked and eaten.
**IUCN category:** Nil

**Scientific name:** *Syzygium cumini* (L.) Skeels.
**Local name:** Naval
**Family:** Myrtaceae
**Mode of use:** Ripe fruits are eaten, it is sweet taste.
**IUCN category:** Nil

**Scientific name:** *Syzygium mundagam* (Bourd.) Chithra.
**Local name:** Kattuchamba
**Family:** Myrtaceae
**Mode of use:** Sponge like pericarp is eaten, the taste is slightly sweet.
**IUCN category:** Endemic

**Scientific name:** *Ziziphus maruteiana* L.
**Local name:** Ilanthai
**Family:** Rhamnaceae
**Mode of use:** Fleshy pericarp of the fruits is consumed it is sweet taste.
**IUCN category:** Nil

**Scientific name:** *Ziziphus oenoplia* (L.) Mill.
**Local name:** Surai Ilantai
**Family:** Rhamnaceae
**Mode of use:** Fleshy pericarp of the fruits is consumed it is sweet taste.
**IUCN category:** Nil

**Leafy vegetable plants**

The plants used as leafy vegetables by the Irula tribals in Walayar valley, Southern Western Ghats of Tamil Nadu, India are cooked and it is taken along with cooked rice. Leaves of *Amaranthus viridis* L., Vellacheera; *Amaranthus spinosus* L., Mullencheera; *Alternanthera sessilis* (L.) R.Br. ex DC., Chuvannacheera and *Allmania nodiflora* (L.) R.Br. ex Wight. (Amaranthaceae), Blancheera; and *Boerhaavia diffusa* L. and *Boerhaavia eracta* L. (Nyctaginaceae), Thazhuthamaare; *Eclipta prostrata* L. (Asteraceae) Manja Karisilangani are sliced into small pieces and boiled in water. Water is decanted and leaves are seasoned in coconut oil with mustard and grated coconut adding salt and chilly.

**Plants as substitute for salt**

*Begonia malabarica* Lamk. (Begoniaecae), Kalpuli and *Cissus discolor* Bl. (Vitaceae), Aaronpuli are used as substitute for salt in curries and

dishes by the Irula tribals in Walayar valley, Southern Western Ghats of Tamil Nadu, India. Leaves of these plants are crushed juice is added to the dish.

**Tubers and rhizome plants**

Tubers and rhizomes are dug out from the forests by the tribals for edible purpose. These are prepared by removing outer skin, tubers and rhizomes; cut into small pieces and boiled in water. Water is decanted and cooked tubers/rhizomes are used as food. *Asparagus racemosus* Willd., *Asparagus fysonii* L. (Endangered), (Liliaceae), Thaneervitaan Kizhangu; *Decalepis hamiltonii* L. Decalipaceae (Endangered); *Dioscorea alata* L. (Kaavuth), *Dioscorea pubera* Roxb. (Kizhangukkodi), *Dioscorea bulbifera* L. (Pannukkizhangu), *Dioscorea oppositifolia* L., Vellamanthal; *Dioscorea pentaphylla* L. Nooran; (Dioscoreaceae), *Maranta arundinacea* L. (Marantaceae), kattukuva yield edible tubers and rhizomes.

**Seed plants**

Seeds of *Artocarpus hirsutus* Lam. Aiyinipila (Endemic), *Artocarpus heterophyllus* Lam. Palaa (Moraceae); *Cycas circinalis* L. (Cycadaceae), Sala panai (Endangered); *Dolichos falcatus* L. (Fabaceae), Kattumuthira; *Entada pursaetha* DC. (Mimosaceae), Vattavalli; and *Sterculia guttata* Roxb. (Sterculiaceae), Kavalam are used as edibles by the tribals. Seeds are normally fried and seed coats are removed. Endosperms are then taken out and consumed. Instead of frying *Entada pursaetha* DC. (Mimosaceae), Vattavalli seed, the thick seed coat is first broken open and endocarps are taken out. They are soaked in water for about 12 hours. After this, endocarps are boiled in water and water is decanted. This is repeated for about 7 times to remove the bitter taste of endocarp. They are then eaten as such. Tribals prefer to consume this only during famine. When endocarps are consumed more, it induces nausea.

**DISCUSSION**

Documentation of wild edible plants from ethnobotanical approach is important for enhancing the understanding of indigenous knowledge systems [22-26]. The wide consumption and availability of wild edible plants attest their value, and are especially visible among indigenous culture. But in recent times, the old traditions in many tribal communities are at risk and gradually decline; hence, there is urgent need to study such knowledge systems and find innovative ways of tapping their potential for the welfare of mankind [27]. But, our study revealed that the tribal community in the Walayar valley continues to have and use the traditional knowledge about the wild edible plants, including their collection period, habit, local name, parts used, medicinal uses, mode of use. To date, this knowledge appear to be fairly well conserved and used as a result of continued reliance of Irula tribal community on the wild uncultivated foods [28, 29].

Due to rapid destruction of forests and the filling up of wetlands for expansion of land area and developmental activities, most of these wild bio-resources are becoming rare and threatened. It is expected that an ever growing population will eventually lead to a greater demand for food and other necessities. As a result the existing biotic pressures may be increased several times in the near future. Therefore, it is important to identify the rare edible bioresources which are the livelihood of many indigenous Walayar valley people so that proper conservative measures may be taken to preserve these local gene pools for our future generations.

**CONCLUSION**

It was observed that the study sites were dominated by the tribal communities. They were mostly poor, under developed, neglected and fully dependent on plants for food and collects wild plants parts like leaves, fruits, seeds, tubers, mushrooms etc. for their self sustenance. However, comparatively only few or rather rare studies have been conducted on fruits. Hence, it is quite significant to carry more intensive scientific studies on these wild edible fruits. It is believed that regular consumption of these fruits will aid in preventing several diseases and disorders including obesity, diabetes and chronic diseases. Since fruits are thought to be rich in nutrients, polyphenols (flavonoids and stilbenes) and carotenes, in recent past, several reports have successfully demonstrated that these bioactive compounds are directly attributed to antioxidant properties against various free radicals. Anti-nutritional factors have to be evaluated before their utilization and consumption. However, recent statistics shows that consumption and utilization of fruits and fruit products is declining. Hence, more scientific studies is required in elucidating the structure and properties of important bioactive compounds present in these minor wild edible fruits, so that more awareness is created among the consumers, which will subsequently benefit to fight several nutrition related problems.

**Source of Support**: Nil.

**Conflict of Interest**: None Declared.

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**HOW TO CITE THIS ARTICLE**
Venkatachalapathi A, Paulsamy S. The Wiled RET Edible Plants Consumed by the Irula tribals of Walayar valley, Southern Western Ghats of India. Journal of Ayurvedic and Herbal Medicine 2017; 3(4):205-209.