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TRADITIONAL KNOWLEDGE TO WILD PLANTS USED IN FOOD AND FOOD ADDITIVES BY IRULA TRIBES IN SIRUVANI HILLS, COIMBATORE DISTRICT OF TAMIL NADU, INDIA

JAGATHES KUMAR.S* G. UMA AND V. BALASUBRAMANIAM
PG AND RESEARCH DEPARTMENT OF BOTANY,
KONGUNADU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS), COIMBATORE- 641 029,
TAMIL NADU, INDIA.

Corresponding author's e-mail: jagathesbio@gmail.com

ABSTRACT:

The present study was carried out during 2012 - 2013 in the study area Siruvani hills rich in biodiversity and ethnic community. The Irula tribes are the main dwellers of these forests. The Irula tribal hamlets are located in the region of Siruvani hills such as Seengapathi, Sarkarborathi and Jagirborathi. During this study the plant species used by irula tribes for all kinds of food and food additives were documented. The different types of wild plants and plant parts are mostly used in food preparations for day-to-day life. They traditionally used 94 edible plants belonging to 77 genera and 48 families. The botanical name, family, vernacular name, habit and mode of preparation were given.

KEY WORDS: Siruvani hills, Irula tribes, Food, Wild plants.

INTRODUCTION:

Ethnobotany is an important tool for studying the plants parts used by specific cultures for various reasons and it traces the development of humanity (Harsh Berger, 1895). In India, it is estimated that about 800 species are consumed as wild edible plants, chiefly by the tribal people (Ajesh *et. al.*, 2012). Root and tuber plants are considered as most important food plants next to cereals. They have the highest rate of dry matter production per day and are major calorie contributors. Tuber plants find an important place in the dietary habits of small

and marginal farmers especially in the food security of tribal population. Many tropical tuber plants are used by them in the preparation of stimulants, tonics, carminatives and expectorants (Arora and Pandey, 1996). The diversity in wild species offers variety in the diet and contributes to household food scarcity (Gowtham Shanker, 2005). The survey of the wild edible plants utilized by tribal peoples in Coimbatore district was conducted by many research workers such as Ramachandran and Manian (1982), Ramachandran (2007) and Rasingam (2012) but the forest of Siruvani hills and surrounding areas have not been studied. The present investigation is an attempt to record the wild food and food additives plants used by tribal peoples who inhabited in Siruvani hills.

STUDY AREA:

The study area is Siruvani hills a part of Nilgiri Biosphere Reserve, Western Ghats is rich in biodiversity and indigenous population in it lies between $76^{\circ} 40'$ and $77^{\circ} 10'$ E longitude and $10^{\circ} 55'$ and $11^{\circ} 10'$ N latitude and form a portion of Boluvampatty reserve forest in Coimbatore district, Tamilnadu, India (Figure 1). According to the divisions made by the forest department Siruvani hills lies in the Boluvampatty reserve forest block No.2. The elevation of the hills range between 1000 and 1500 m above the mean sea level (MSL), highlands enjoy a temperate climate; the lowlands have a warm humid climate. The summer from March to May is followed by the southwest monsoon from June to September. The winter is from December to February and the northeast monsoon is almost scanty during the same period. On the average, 1200mm annual rainfall and there are 120 raining days in a year. The mean daily temperature in the highlands is 20°C - 24°C and at lower elevation it may vary from 25°C - 40°C . The Irula tribal hamlets are located in Seengapathi, Sarkarborathi and Jagirborathi of Siruvani foot hills. Major tribal population of the area is Seengapathi hamlet is with 58 families comprising about 228 peoples and another hamlet Sarkarborathi with 47 family and 163 peoples, Jagirborathi with 39 family and 132 peoples.

MATERIALS AND METHODS:

Frequent field trips were conducted in Siruvani hills covering different seasons in Irula tribal hamlets during 2012 - 2013. The tribal medicine man and elder man and women were interacted for information's regarding each edible plant viz., local (vernacular) name, parts used as food, food additives and preparation methods. The collected specimens were identified with the help of the Flora of the Presidency of Madras (Gamble. J. S & C.E.C. Fischer 1915-1935), The Flora of Coimbatore district (Chandrabose. M & Nair.N.C.1988) and The Flora of the Tamilnadu Carnatic (Mathew. K. M. 1981-1988). The voucher specimens were deposited in the Herbarium of Department of Botany, Kongunadu Arts and Science College, Coimbatore, Tamilnadu. The identified plants are presented in the table form. The plants are

arranged alphabetically with botanical names followed by family, vernacular name, habit and mode of preparation.

RESULTS AND DISCUSSION:

Among the Irula tribes, diet comprising the more variety of alternative food and food additives such as edible forms of whole plant, leaves, bark, fruits (immature and ripening), stem, seeds, tubers, rhizomes, inflorescence, of angiosperms and some ferns (Table-I). In the present study, about 94 wild edible plant species were documented such as 32 are herbs, 10 are shrubs, 25 are climbers, 4 are stragglers and 23 are trees (Figure 2).

Wild plants used in food preparation are green vegetables is leaves (38 plants), edible tubers and bulb (15 plants), edible fruits (27 plants), as seeds (7 plants), young twig (3 plants) and inflorescence (1 plant) (Figure 3).

The Irula womens are mostly collected leafy vegetables of *Amaranthus spinosus*, *A. viridis*, *Centella asiatica*, *Bacopa monnieri*, *Celosia argentea*, *Marselia quadrifolia*, *Portulaca oleracea*, *Cardiospermum halicacabum*, *Oxalis corniculata*, *Boerhavia diffusa* and *Solanum nigrum*; fruits of *Aegle marmelos*, *Ficus racemosa*, *Ziziphus oenoplia*, *Z. mauritiana*, *Phyllanthus emblica* and *Limonia acidissima*; seeds of *Piper hymenophyllum*, *Mucuna monosperma* and *M. pruriens* from local forest areas. Irula mens collected mainly wild tuber plants such as *Dioscorea bulbifera*, *D. pentaphylla*, *Asparagus racemosus*, *Hemidesmus indicus* and *Decalepis hamiltonii*; bark of *Acacia catechu*, *Caesalpinia sappan*, *Cinnamomum zeylanicum* and some wild fruits of *Mangifera indica*, *Artocarpus heterophyllus*, *Syzigium cumini*.

CONCLUSION:

The Irula tribes are well knowledged persons in using wild plants in medicine and food preparation. The main problem with tribal medicine and wild edible plant is the absence of recorded data. So, this valuable medicinal and food plants are addressed urgently to conservation status and save the natural resources of Siruvani hills. Nowadays in metropolitan area peoples eating in unhealthy daily foods of all vegetables cultivated using harmful chemical fertilizers, pesticides and synthetic food chemicals added in all food products. So, humans are affected in lot of diseases such as diabetics, cancer, ulcer, arthritic, piles, obesity and blood pressure. But, Irula tribes are easily naturally grown wild edible plants as regular and seasonal foods. Hence they are not infected with any diseases.

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library and herbarium. The authors are thankful to the Irula tribes for sharing their valuable knowledge with us.

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Table 1: List of wild plants used in food and food additives by Irula tribes of the Siruvani hills in Coimbatore district

S.No	Botanical Name	Family	Vernacular Tamil Name /	Habit	Parts used and Mode of preparation
1.	<i>Acacia catechu</i> Willd.	Mimosaceae	Karungali	Tree	Heart wood powder heated in water and adds honey to drink with coffee.
2.	<i>Acacia pinnata</i> Willd.	Mimosaceae	Seengadagu	Straggler	Young leaf cooked and eaten.
3.	<i>Acalypha fruticosa</i> Forsk.	Euphorbiaceae	Sirusinni	Shrub	Leaves cooked and eaten.
4.	<i>Aegle marmelos</i> (L.) Corr.	Rutaceae	Vilvam	Tree	Mature fruit flesh eaten.
5.	<i>Alternanthera tenella</i> Lam.	Amaranthaceae	Ponnankani	Herb	Leaves cooked and eaten.
6.	<i>Amaranthus spinosus</i> L.	Amaranthaceae	Mullukeerai	Herb	Leaves cooked and eaten.
7.	<i>Amaranthus viridis</i> L.	Amaranthaceae	Kuppaikeerai	Herb	Leaves cooked and eaten.
8.	<i>Amorphophallus paeoniifolius</i> (Dennst.)Nicol.	Araceae	Kattu senai	Herb	Bulb boiled and add salt with chilly to prepare a curry.
9.	<i>Annona squamosa</i> L.	Annonaceae	Sithapazham	Tree	Ripening fruits eaten.
10.	<i>Asparagus racemosus</i> Willd.	Liliaceae	Sadavari	Climber	Tubers boiled add salt to eaten.
11.	<i>Asystasia gangetica</i> (L.) T.And.	Acanthaceae		Herb	Leaves cooked and eaten.
12.	<i>Atalantia monophylla</i> Corr.	Rutaceae	Kattu Elumichai	Tree	Unripe fruits used for pickle preparation.
13.	<i>Artocarpus heterophyllus</i> Lamk.	Moraceae	Pala	Tree	Ripe fruits eaten and young fruits used in curry preparation. Seeds eaten by boiling with salt.
14.	<i>Bacopa monnieri</i> (L.) Pennell	Scrophulariaceae	Neer-Brahmi	Herb	Leaves crushed with salt and chilly to prepare chutney.
15.	<i>Basella alba</i> L.	Basellaceae	Pasalaikeerai	Climber	Leaves cooked and eaten.
16.	<i>Boerhavia diffusa</i> L.	Nyctaginaceae	Mukkaradai	Herb	Leaves cooked and eaten.
17.	<i>Borreria hispida</i> (L.) Sch.	Rubiaceae	Nathaisuri	Herb	Seed powder heated in water and adds honey to drink in coffee.
18.	<i>Caesalpinia sappan</i> L.	Caesalpinaceae	Pathimugam	Tree	Bark powder heated in water and adds honey to drink in coffee.
19.	<i>Canthium parviflorum</i> Lam.	Rubiaceae	Karachedi	Tree	Fruits eaten.
20.	<i>Capsicum frutescens</i> L.	Solanaceae	Kattu-Milagai	Herb	Unripe fruits used for chutney preparation.
21.	<i>Cardiospermum halicacabum</i> L.	Sapindaceae	Mudakkathan	Climber	Young leaves cooked and eaten.
22.	<i>Carissa carandas</i> L.	Apocynaceae	Kalakkai	Climber	Unripe fruits eaten and used for pickle preparation.
23.	<i>Carissa spinarum</i> L.	Apocynaceae	Siru kalakai	Climber	Unripe fruits eaten and used for pickle preparation.
24.	<i>Cassia occidentalis</i> L.	Caesalpinaceae	Pei-avarai	Shrub	Young leaf cooked and eaten.
25.	<i>Cassia sophera</i> L.	Caesalpinaceae	Pon-avarai	Shrub	Leaves cooked and eaten.
26.	<i>Cassia tora</i> L.	Caesalpinaceae	Tagarai	Shrub	Leaves cooked and eaten.
27.	<i>Celosia argentea</i> L.	Amaranthaceae	Pannai keerai	Herb	Leaves cooked and eaten.

S.No	Botanical Name	Family	Vernacular / Tamil Name	Habit	Parts used and Mode of preparation
28.	<i>Centella asiatica</i> (L.) Urb.	Apiaceae	Vallarai	Herb	Chutney was prepared from Leaves.
29.	<i>Cinnamomum zeylanicum</i> Bl.	Lauraceae	Karruwa	Tree	Bark spice adds small quantity to curry preparations.
30.	<i>Cissus quadrangularis</i> L.	Vitaceae	Pirandai	Climber	Young twig crush by adding salt and chilly to prepare chutney.
31.	<i>Coccinia grandis</i> (L.) Voigt.	Cucurbitaceae	Kovai-thalai	Climber	Leaves and fruits cooked and eaten.
32.	<i>Colocasia esculenta</i> (L.) Schott.	Araceae	Kattu sempukizhangu	Herb	Rhizomes eaten by boiling with salt.
33.	<i>Commelina benghalensis</i> L.	Commelinaceae	kanavazhai	Herb	Leaves cooked and eaten.
34.	<i>Commicarpus chinensis</i> (L.) Heimerl	Nyctaginaceae		Herb	Leaves cooked and eaten.
35.	<i>Curculigo orchioides</i> Gaertner.	Hypoxidaceae	Nilappanai	Herb	Tuber boiled and adds salt to eaten.
36.	<i>Curcuma neilgherrensis</i> Wight.	Zingiberaceae	Kattu-manjal	Herb	Tuberous root in spice adds small quantity to curry preparations.
37.	<i>Cyclea peltata</i> Hook.f. & Thoms.	Menispermaceae	Padai kizhangu	Climber	Tuberous root powder heated in water and adds honey to drink.
38.	<i>Cymbopogon citrates</i> Stapf	Poaceae	Lemon-Grass	Herb	Leaf powder heated in water and adds honey to drink in coffee.
39.	<i>Decalepis hamiltonii</i> Wight & Arn.	Asclepiadaceae	Magali-kizhangu	Climber	Tuber powder heated in water and adds honey to drink in coffee.
40.	<i>Delonix regia</i> Raf.	Caesalpinaceae	Mayaram	Tree	Seeds fried and eaten.
41.	<i>Digera muricata</i> (L.) Mart.	Amaranthaceae	Sunnambukeerai	Herb	Leaves cooked and eaten.
42.	<i>Dioscorea alata</i> L.	Dioscoreaceae	Mullu-valli	Climber	Tubers boiled to prepare curry.
43.	<i>Dioscorea bulbifera</i> L.	Dioscoreaceae	Pannu-valli	Climber	Tubers boiled to prepare curry.
44.	<i>Dioscorea oppositifolia</i> L.	Dioscoreaceae	Kavathu-kizhangu	Climber	Tubers boiled to prepare curry.
45.	<i>Dioscorea pentaphylla</i> L.	Dioscoreaceae	Noorai-kizhangu	Climber	Tubers boiled to prepare curry.
46.	<i>Diplazium esculentum</i> (Retz.) Sw.	Pteridaceae	Surulidagu	Herb	Young twig cooked and eaten.
47.	<i>Eclipta prostrata</i> L.	Asteraceae	Karisalankanni	Herb	Leaves cooked and eaten.
48.	<i>Euphorbia hirta</i> L.	Euphorbiaceae	Ammanpacharisi	Herb	Leaves cooked and eaten.
49.	<i>Ficus benghalensis</i> L.	Moraceae	Aalamaram	Tree	Fruits mixed with honey to eaten.
50.	<i>Ficus racemosa</i> L.	Moraceae	Atthimaram	Tree	Fruits mixed with honey to eaten.
51.	<i>Ficus religiosa</i> L.	Moraceae	Arasamaram	Tree	Fruits mixed with honey to eaten.
52.	<i>Hemidesmus indicus</i> R.Br.	Asclepiadaceae	Nannari	Climber	Tuberous root powder heated in water and adds honey to drink in coffee.
53.	<i>Iphigenia indica</i> Kunth.	Liliaceae	Pul-amanakku	Herb	Corn boiled and used for curries preparation.

S.No	Botanical Name	Family	Vernacular / Tamil Name	Habit	Parts used and Mode of preparation
54.	<i>Ipomoea aquatica</i> Forsk.	Convolvulaceae	Vellai keera	Climber	Leaves cooked and eaten.
55.	<i>Limonia acidissima</i> Wight Arn.	Rutaceae	Vilam pazham	Tree	Ripe fruit pulp raw eaten.
56.	<i>Lippia nodiflora</i> (L.) A.Rich.	Verbenaceae	Poduthalai	Herb	Leaves cooked and eaten.
57.	<i>Mangifera indica</i> L.	Anacardiaceae	Maa-maram	Tree	Fruits eaten and unripe fruits used to prepare pickle.
58.	<i>Marsilea quadrifolia</i> L.	Marsileaceae	Araik-keera	Herb	Fresh leaves used for making chutney.
59.	<i>Memordica charantia</i> L.	Cucurbitaceae	Kattu-Pavakkai	Climber	Leaves and unripe fruit cooked and eaten.
60.	<i>Mentha arvensis</i> L.	Lamiaceae	Pothina	Herb	Leaves used for chutney preparation.
61.	<i>Moringa concanensis</i> Nimmo ex Gibs.	Moringaceae	Kattu-murangai	Tree	Leaves and fruit cooked and eaten.
62.	<i>Mucuna monosperma</i> DC.	Fabaceae		Climber	Seeds fried or boiled to eaten.
63.	<i>Mucuna pruriens</i> Baker	Fabaceae	Punaikali	Climber	Seeds fried or boiled to eaten
64.	<i>Mukia maderaspatana</i> (L.) M. Roemer	Cucurbitaceae	Musumusukkai	Climber	Leaves cooked and eaten.
65.	<i>Murraya paniculata</i> (L.) Jack.	Rutaceae	Kattu-karuveppilai	Shrub	Fresh leaves making in chutney and curry preparation.
66.	<i>Myristica dactyloides</i> Gaert.	Myristicaceae	Kattu-Jathikai	Tree	Seeds used in spice and outer part used in pickle preparation.
67.	<i>Oxalis corniculata</i> L.	Oxalidaceae	Pulicha-keera	Herb	Fresh leaves used for making chutney.
68.	<i>Passiflora foetida</i> L.	Passifloraceae	Kurangu-pazham	Climber	Ripe fruits eaten.
69.	<i>Phoenix sylvestris</i> (L.) Roxb.	Arecaceae	Eecha-maram	Tree	Ripe fruits eaten.
70.	<i>Phyllanthus emblica</i> L.	Euphorbiaceae	Mala-nelli	Tree	Mature fruit eaten and used for pickle preparation.
71.	<i>Physalis peruviana</i> L.	Solanaceae	Sodukkukai	Herb	Leaves cooked and eaten.
72.	<i>Piper hymenophyllum</i> Miq.	Piperaceae	Kattu-Milagu	Climber	Seeds in spice and add curry preparation.
73.	<i>Piper longum</i> L.	Piperaceae	Thippili	Climber	Inflorescence used for curry preparation.
74.	<i>Pithecellobium dulce</i> Benth.	Mimosaceae	Kodukkapuli	Tree	Fruits eaten.
75.	<i>Portulaca oleracea</i> L.	Portulacaceae	Kozhi-keera	Herb	Leaves cooked and eaten.
76.	<i>Pteridium aquilium</i>	Pteridaceae	Surulikeera	Herb	Young twig cooked and eaten.
77.	<i>Rubus ellipticus</i> Smith.	Rosaceae	Semmullu	Shrub	Ripe fruits eaten.
78.	<i>Rubus niveus</i> Thunb.	Rosaceae	Kurangumullu	Shrub	Ripe fruits eaten.
79.	<i>Scilla indica</i> (Wight) Baker	Liliaceae	Narivengayam	Herb	Corm boiled and curries preparation.
80.	<i>Scutia myrtina</i> Kurz.	Rhamnaceae	Perumsoori	Straggler	Fruits raw eaten.
81.	<i>Solanum nigrum</i> L.	Solanaceae	Kakkadagu	Herb	Leaves and fruit cooked and eaten.
82.	<i>Solanum torvum</i> Sw.	Solanaceae	Sundakkai	Shrub	Fruits fried and eaten.
83.	<i>Solanum trilobatum</i> L.	Solanaceae	Tuduvalai	Climber	Leaves cooked and eaten.
84.	<i>Syzygium cumini</i> L.	Myrtaceae	Naval	Tree	Fruits eaten.
85.	<i>Tamarindus indica</i> L.	Caesalpinaceae	Puliya maram	Tree	Fruits pulps used to prepare

S.No	Botanical Name	Family	Vernacular / Tamil Name	Habit	Parts used and Mode of preparation
					chutney and curry.
86.	<i>Terminalia bellerica</i> (Gaert.) Roxb.	Combretaceae	Thanikkai	Tree	Outer part of seed powder heated in water and adds honey to drink in coffee.
87.	<i>Tinospora cordifolia</i> Miers.	Menispermaceae	Sinthil kodi	Climber	Leaves cooked and eaten.
88.	<i>Toddalia asiatica</i> (L.) Lamk.	Rutaceae	Milakaranai	Shrub	Leaves cooked and eaten.
89.	<i>Trianthema portulacastrum</i> L.	Aizoaceae	Mukkaratai	Herb	Leaves cooked and eaten.
90.	<i>Trichosanthes cucumerina</i> L.	Cucurbitaceae	Kattu-padavalam	Climber	Fruits cooked and eaten.
91.	<i>Vetiveria zizanioides</i> (L.) Nast.	Poaceae	Vetiver	Herb	Root powder heated in water and adds honey to drink in coffee.
92.	<i>Ziziphus mauritiana</i> Lam.	Rhamnaceae	Ilanthai	Tree	Fruits eaten.
93.	<i>Ziziphus oenoplia</i> (L.) Mill.	Rhamnaceae	Suri pazham	Straggler	Fruits eaten.
94.	<i>Ziziphus trinervia</i> Roxb.	Rhamnaceae	Karuggavu	Straggler	Fruits eaten.

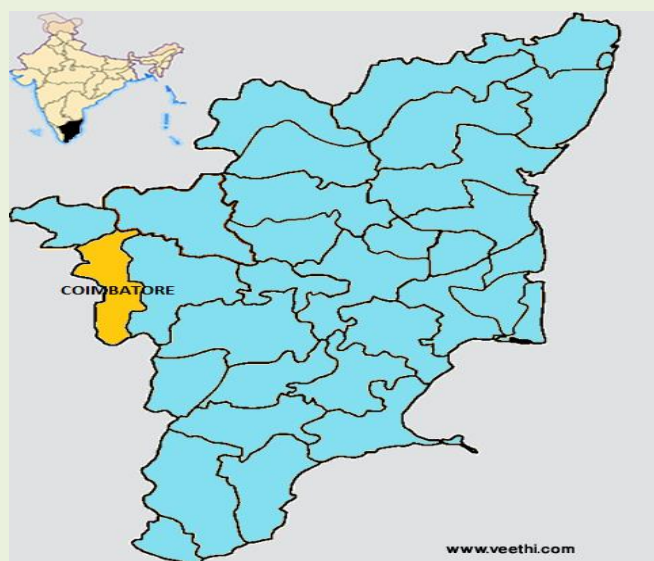


Figure 1: Map showing the study area, wherein wild edible plants were documented during 2012-2013 at Coimbatore District, Tamil Nadu, India

Life form of Wild Edible Plants

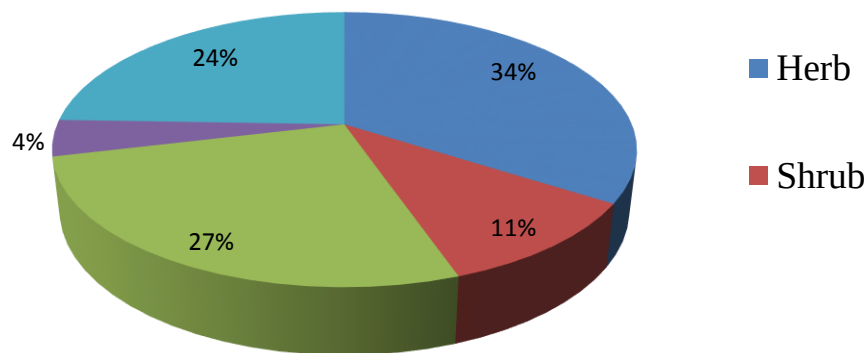


Figure 2: Life form wise distribution of wild edible plant species in the study area

Plant parts used food preparation of Irula tribes

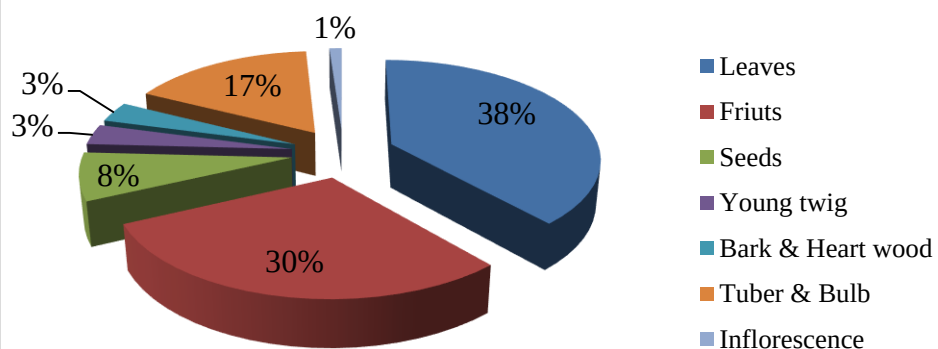


Figure 3: Different plant parts used in food preparation by Irula tribes