

**ETHNOMEDICINAL PLANTS USED BY IRULA TRIBES OF MARUTHAMALAI HILLS OF COIMBATORE DISTRICT, WESTERN GHATS, INDIA****S.S. TAMILSELVI<sup>1</sup>, A. VENKATACHALAPATHI<sup>2</sup> AND S. PAULSAMY<sup>\*,2</sup>**<sup>1</sup>*R & D, Bharathiar University, Coimbatore - 641046, India.*<sup>2</sup>*Department of Botany, Kongunadu Arts and Science College, Coimbatore-641029, India.***ABSTRACT**

The ethnobotanical information was collected through interviews among local traditional healers of Irulas tribes in Maruthamalai hills of Western Ghats. A total of 163 species of plants distributed in 130 genera belonging to 49 families were identified as commonly used ethnomedicinal plants in the study. Trees were the major life form (30%) used for therapeutic uses and decoction was the commonly used method of medicine preparation (39%). Internal uses were more predominant (63%) than the other mode of applications; the study revealed that both single mode of preparation (61 species) and multiple mode of preparation (102 species) of medicine were common. The information documented regarding the therapeutic uses in the present study will provide basic data for further studies mainly focused on conservation, cultivation and economic welfare of the tribal population.

**KEYWORDS:** Herbal medicine, Ethnobotany, Irula tribes, Maruthamalai Hills, Tamil Nadu.**S. PAULSAMY**

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## INTRODUCTION

Human beings from the very beginning of its appearance on this earth has been indispensably associated with the plant kingdom for its survival.<sup>1</sup> Higher plants are an important source of therapeutic drugs and play a significant role in the survival of the tribal and ethnic communities since time immemorial. The tribal people are the integral part of ecosystem who live in harmony with the nature and maintain a close link between man and environment. The World Health Organization (WHO) estimates that some 80% of the developing world relies on the traditional medicines and 85% of these are using plants or their extracts as active substances as plant drugs for their primary health care needs.<sup>2,3</sup> In the developed countries, 25% of the medical drugs are based on plants and their derivatives and the use of medicinal plants is well known among the indigenous people in rural areas<sup>4</sup>. The practice of using plants in medicine is still prevailing not only among the tribal groups, but also others living in the rural areas. India is one of the most medico-culturally diverse countries in the world where the medicinal plant sector is part of a time honoured tradition that is respected even today. The country possesses an ancient system of healthcare based chiefly medicinal plants of diverse nature, ranging from higher plants to microorganisms from which more than 80% of therapeutic products are derived have been used for 6000–7000 years.<sup>5</sup> The knowledge of medicinal plants has been accumulated in the course of many centuries based on different medical systems such as Ayurveda, Unani and Siddha.<sup>6</sup> The indigenous people nurture rich knowledge about medicinal plants developed over generations by bold experimentation through trial and error methods.<sup>7</sup> This treasure of knowledge has been passed orally without any written documents and is still retained by them.<sup>8</sup> In the last few years, there has been an exponential growth in the field of herbal or traditional medicine and these drugs are gaining popularity because of their natural origin and exhibit remarkable efficacy in the treatment of various ailments.<sup>9</sup> A vast knowledge of how to use the plants against different illness may be expected to have accumulated in areas where the use of plant is still of great importance.<sup>10</sup> Ethno-medicinal studies are a suitable source of information regarding useful medicinal plants that can be targeted for domestication and management.<sup>11</sup> These studies assume great importance in enhancing our traditional skills and technology about the plant grown and used for native or tribal communities for their sustenance. The use of ethnobotanical information in medicinal plant research has gained considerable attention in segment of the scientific community.<sup>12</sup> Also, traditional medicine and ethno-botanical information play an important role in scientific research, particularly when the literature and field work data have been properly evaluated.<sup>13,14</sup> In the recent years, number of reports on the use of plants in traditional healing by either tribal people or indigenous communities of India particularly Western Ghats of Tamil Nadu is increasing.<sup>15–35</sup> A few reports on ethnomedicinal uses of plants in the forests of Maruthamalai hills and its adjoining areas were available.<sup>36,38</sup> All these studies were conducted to

document the information on traditional and cultural practices of the varied people residing in and around the study region, but there is no such comprehensive study on this region particularly for Irula tribes and also hills as whole. Therefore, the present study was aimed to document their indigenous ethnomedicinal knowledge of Irula tribals Maruthamalai hills of Western Ghats in Tamil Nadu, India on the utilization of commonly used medicinal plants.

## METHODOLOGY

### *Study area and people*

The present study conducted in the Maruthamalai hills (11.04'E and 76.93'N) situated in the southern Western Ghats, Coimbatore (Fig. 1). It consists of a mainly dry deciduous type of forests at the altitude between 426 and 720 m above MSL covers about 75km<sup>2</sup>. Temperature begins increasing after March. April is the hottest month with a near daily maximum temperature of 38.2°C and minimum of 25.6 °C. The average rainfall of the region is above 400mm/year. The native tribal people of Maruthamalai hills are Irulas, one of the 36 scheduled tribes of Tamil Nadu. The Irula tribes are also spread along the certain hill ranges of Eastern Ghats viz., Javathu, Kolli, Yercaud and Pachamalai. They are Tamil speaking hill tribes and all are basically depends on agricultural and forest resources for their survival.<sup>39</sup> Most of the Irula tribes have great knowledge of medicinal plants that are used mainly for first aid remedies to treat cough, cold, fever, headache, poisonous bites and some other ailments.<sup>30</sup> In Maruthamalai hills 24 families of Irulas with the total population of 98 are inhabiting in three settlements.

### *Data collection*

The field survey was conducted in Irula tribal habitations of Maruthamalai hills during the period of March, 2014 - December, 2015. 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 (Fig. 2). 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'<sup>40</sup> and 'Flora of Tamil Nadu Carnatic'.<sup>41</sup> The binomials are confirmed with the specimens deposited in herbarium center, Botanical Survey of India, Southern Circle, Coimbatore. All the reported species were arranged alphabetically and provided the botanical name of the plant, family, specimen number, local (Tamil) name, life-form, parts used, ailments treated, method of preparation and mode of administration.

### *Ailment categories*

Based on the information obtained from the traditional healers in the study area, all the ailments were grouped into 15 categories<sup>42</sup> viz., Gastro-Intestinal Ailments

(GIA), Dermatological Infections/ Diseases (DID), Respiratory Systems Diseases (RSD), Genito-Urinary Ailments (GUA), Fever (Fvr), Skeleto-Muscular System Disorders (SMSD), Poisonous Bites (PB), Circulatory System/Cardio-vascular Diseases (CSCD), Endocrinal

Disorders (ED), Dental Care (DC), Hair Care (HC), Ear, Nose, Throat Problems (ENT), Cooling Agents (CA), Liver Problems (LP) and General Health (GH), (Table 1).

**Table 1**  
**Irulas ailments grouped by illness category (Cook, 1995).**

S. No.	Ailment categories	Biomedical terms	Tamil terms		
1.	Circulatory system/ cardiovascular diseases (CSCD)	Cardiac disorders	Idhaya noi		
		Blood purification	Rattha sutthigarippu		
		Blood pressure	Rattha alutham		
		Blood clotting	Rattham uraidhal		
		Anemia	Rattha cokai		
2.	Cooling agent (CA)	Memory power	Gnabaga sakthi		
		Body coolant	Udal kulircchi		
3.	Dental care (DC)	Toothache	Pal vali		
4.	Dermatological infections/diseases (DID)	Cuts	Vettukkayam		
		Wound healing	Kaayam		
		Skin diseases	Thol noi		
		Eczema	Thol alargi		
		Pimples	Mugapparu		
		Scabies	Sori/sirangu		
		Ringworm infection	Padarthamarai		
		Itching	Arippu/pocchikadi		
		Leucoderma	Ven kustam		
		Small pox	Cina ammai		
		Psoriasis	Thollil thadipu/sori		
		Sores	Pungal		
		5.	Ear, nose, throat problems (ENT)	Eye pain	Kan vali
				Ophthalmia	Kan alarji
Ear pain	Kathu vali				
Mouth ulcer	Vaai pun				
Saliva secretion	Umil neer surathal				
6.	Endocrinal disorders (ED)	Diabetes	Sarkkarai/neeerilivu noi		
		Kidney stone	Siruneeraga kal		
		Urinary problem	Siruneeraga thontharavu		
		Diuretic	Siruneer piripu		
7.	Fever (Fvr)	Fever	Kaichal		
		Malaria fever	Malaria kaichal		
8.	Gastro-intestinal ailments (GIA)	Ulcer	Vayitru pun		
		Stomachache	Vayitru vali		
		Gastric complaints	Vayvu kolaru		
		Digestion/indigestion	Geeranam/ageeranam		
		Dysentery	Seedhabaethi		
		Diarrhea	Vayitru pokku		
		Cholera	Kalara		
		Intestinal worms	Kudal pulu		
		Vermifuge	Kudal pulu kolli		
		Vomiting/Emetic	Vanthi/ Vanthi undu panugira		
			Kumattal		
			Cerimanaminmai		
			Kudal irakam		
9.	General health (GH)	Tonic	Sathu marunthu		
		Cracked feet	Patha vedipu		
		Obesity	Udal baruman		
		Cachexia	Udal nalamainmai		
10.	Genito-urinary ailments (GUA)	Piles	Mula noi		
		Menstrual problem	Mataviṭay thontharavugal		
		Abortion	Karu kalaipu		
		Male/ female fertility	Anmai sakthi perukkuthal		
		Venereal diseases	Paalvinai noi		
		Laxative	Malacikal		
		Purgative	Bedi		
11.	Hair care (HC)	Dandruff	Podugu		
12.	Liver problem (LP)	Jaundice	Manajal kaamalai		
		Spleen enlargement	Manniral virivakkam		
13.	Poisonous bite (PB)	Liver tonic	Kalliral noiku tanik		
		Antidote	Matru marunthu		
		Snake bite	Pambukkadi		
		Dog bite	Naikkadi		
		Poisonous bite	Vishakkadi		
		Scorpion bite	Thaelkkadi		
14.	Respiratory system diseases (RSD)	Insect bite	Puchi kadi		
		Asthma	Mocchu thinaral		
		Bronchitis	Marbuchalli		
		Wheezing	Mocchu kulai noi		

		Chest pain Cold Cough Pneumonia	Nenju vali Jalathosam Irumal Janni
15.	Skeleto-muscular system disorders (SMSD)	Rheumatism Body pain Arthritis Joint pain Tumor Bone fracture Swelling/inflammation/ dryopsy Headache/one side headache Paralysis Nervous problem Muscular pain Stiffness in legs Backache Sprain Leprosy Elephantiasis Beriberi	Moottu vadham Udal vali Kilvatam Moottu vali Putru noi Elumpu murivu Veekam Thalai vali Pakavatam Narambu pathipu Tacai vall Kalkaluku valimai Mudhugu valli Sulukku Thollu noi Yanaikkal noi Beriberi

**Table 2**  
**List of commonly used medicinal plants by Irula tribals in Maruthamalai hills.**

S. No.	Name of the species	Family	Local/common name	Parts used	Ailment category: number of use reports (ailments treated)	Preparation	Application
1	<b>Herbs</b> <i>Acalypha indica</i> L.	Euphorbiaceae	Kuppaimeni	Whole plant	ED-1 (diabetes) GIA-1 (ulcers) RSD-1 (bronchitis)	Juice Decoction Powder Paste	Oral Oral Oral Topical
2	<i>Acanthospermum hispidum</i> DC.	Asteraceae	Mullicheddi	Leaves	LP-1 (Jaundice)	Juice	Oral
3	<i>Achyranthes aspera</i> L.	Amaranthaceae	Nayurivi	Whole plant	GIA-1 (dysentery) DID-1 (skin eruptions) ED-1 (kidney diseases) RSD-1 (asthma) GUA-2 (abortion) PB-1 (antidote)	Decoction Paste Juice Decoction Decoction Decoction	Oral Topical Oral Oral Oral Oral
4	<i>Aerva lanata</i> Juss.	Amaranthaceae	Poola poo	Whole plant	ED-2 (diabetes) DID-1 (cuts)	Decoction Paste	Oral Topical
5	<i>Alternanthera pungens</i> Kunth.	Amaranthaceae	Khaki weed	Whole plant	GUA-1 (gonorrhoea) ED-1 (diuretic)	Decoction Decoction	Oral Oral
6	<i>Alysicarpus monilifer</i> DC.	Fabaceae	Kasukkoti	Roots	Fvr-1 (fever)	Powder	Topical
7	<i>A. rugosus</i> DC.	Fabaceae	Red moneywort	Roots	Fvr-1 (fever)	Powder	Topical
8	<i>Amaranthus viridis</i> L.	Amaranthaceae	Kuppai kirai	Whole plant	PB-2 (snakebite) SMSD -1 (inflammations)	Juice Paste	Oral Topical
9	<i>Barleria buxifolia</i> L.	Acanthaceae	Karaculli	Leaves Roots	RSD-1 (cough) SMSD -1 (inflammations)	Decoction Paste	Oral Topical
10	<i>B. prionitis</i> L.	Acanthaceae	Kundan	Leaves Roots	Fvr-1 (fever) DC-1 (tooth ache) RSD-1 (cough) SMSD-1 (glandular swelling)	Juice Paste Decoction Paste	Oral Topical Oral Topical
11	<i>Blepharis maderaspatensis</i> (L.) B.	Acanthaceae	Kozhimookkan	Whole plant	GUA-1 (venereal diseases) GIA-1 (gas trouble)	Decoction Decoction	Oral Oral

12	<i>Boerhavia diffusa</i> L.	Nyctaginaceae	Mukkurttaikkoti	Whole plant	RSD-1 (asthma) LP-2 (jaundice) PB-1 (antidote) SMSD -1 (inflammations) GIA-1 (abdominal pain) ED-1 (scanty urine)	Juice Decoction Paste Paste Decoction Decoction	Oral Oral Topical Topical Oral Oral
13	* <i>Borreria hispida</i> K. Sch.	Rubiaceae	Nathai choori	Leaves and roots	DC-1 (tooth worm)	Paste	Topical
14	<i>B. ocyroides</i> DC.	Rubiaceae	Peeli	Roots	DC-1 (tooth worm)	Paste	Topical
15	<i>Cassia occidentalis</i> L.	Caesalpinaceae	Nattam takarai	Leaves Roots Fruits	SMSD -1 (rheumatism) GIA-1 (digestive) ED-1 (diabetes) RSD-1 (wheezing) DID-1 (ringworm) PB-1 (scorpion sting) ENT-1 (saliva secretion)	Decoction Decoction Juice Decoction Paste Paste Decoction	Oral Oral Oral Oral Topical Topical Oral
16	<i>Cleome viscosa</i> L.	Capparidaceae	Naikadugu	Whole plant	GIA-1 (diarrhea) PB-1 (antidote) CSCD-1 (cardiac disorders)	Juice Paste Decoction	Oral Topical Oral
17	<i>Crotalaria verrucosa</i> L.	Fabaceae	Gilugiluppai	Leaves	CSCD-1 (blood purification) Fvr-1 (fever) DID-1 (scabies) GIA-1 (dyspepsia)	Juice Decoction Paste Decoction	Oral Oral Topical Oral
18	<i>Croton bonplandianum</i> Baill.	Euphorbiaceae	Reilpoondu	Seeds	GIA-1 (dyspepsia)	Decoction	Oral
19	<i>Cynodon dactylon</i> Pers.	Poaceae	Arugampillu	Whole plant	GIA-1 (stomach trouble) DID-1 (skin diseases) PB-1 (antidote) GIA-1 (vomiting)	Juice Paste Decoction Decoction	Oral Topical Oral Oral
20	<i>Desmodium triflorum</i> DC.	Fabaceae	Sirupullati	Whole plant	RSD-2 (Cough) PB-1 (antidote) GIA-2 (diarrhea)	Juice Paste Decoction	Oral Topical Oral
21	<i>Euphorbia hirta</i> L.	Euphorbiaceae	Ammaan pachcharisi	Whole plant	PB-1 (antidote) RSD-2 (asthma) GIA-1 (diarrhea) ED-1 (kidney diseases) GIA-1 (intestinal worms)	Paste Decoction Decoction Decoction Decoction	Topical Oral Oral Oral Oral
22	<i>Evolvulus alsinoides</i> L.	Convolvulaceae	Vishnukranthi	Whole plant	RSD-2 (bronchitis)	Juice	Oral
23	<i>Gloriosa superba</i> L.	Lilaceae	Kannuvalik Kodi	Tubers	GH-1 (tonic) GIA-6 (ulcers) DID-1 (skin diseases) GUA-1 (abortion) SMSD -1 (neuralgic pains)	Powder Juice Paste Decoction Juice	Topical Oral Topical Oral Oral
24	<i>Heteropogon contortus</i> Beauv.	Poaceae	Oosipullu	Roots	SMSD -1 (rheumatism) ED-1 (diuretic)	Decoction Juice	Oral Oral
25	<i>Hibiscus micranthus</i> L.f.	Malvaceae	Oorikai	Fruits	HC-1 (dandruff) GUA-1 (laxative)	Powder Decoction	Topical Oral
26	<i>Indigofera enneaphylla</i> L.	Fabaceae	Sheppunerunji	Whole plant	PB-1 (anti scorbutic) DID-1 (burns) ED-1 (diuretic)	Decoction Paste Powder	Oral Topical Topical

27	<i>Justicia tranquebariensis</i> L. f.	Acanthaceae	Tavacumurunkai	Leaves	CA-1 (cooling aperients) DID-1 (small pox)	Juice Paste	Oral Topical
28	<i>Leucas aspera</i> Spr.	Laminaceae	Thumbai	Whole plant	SMSD -2 (head ache) RSD-2 (cough) ENT-1 (eye complaints)	Paste Decoction Juice	Topical Oral Oral
29	<i>Malvastrum coromandelianum</i> Garcke.	Malvaceae	Ponmucuttai	Leaves Flowers	GIA-1 (dysentery) PB-1 (antidote) DID-1 (inflamed sores)	Decoction Paste Paste	Topical Topical Oral
30	<i>Mollugo pentaphylla</i> L.	Azoaceae	Turapoondur	Leaves	GIA-1 (stomachic) ENT-1 (earache)	Juice Juice	Oral Oral
31	<i>Oldenlandia umbellata</i> L.	Rubiaceae	Chaaya ver	Leaves Roots	RSD-3 (asthma) PB-1 (poisonous bites)	Decoction Decoction	Oral Oral
32	* <i>Orthosiphon thymiflorus</i> (Roth.) Sleesen.	Lamiaceae	Kattuthritha	Whole plant	GIA-2 (diarrhea) PB-1 (antidote) Fvr-1 (fever) DID-1 (scabies)	Decoction Paste Decoction Paste	Oral Topical Oral Topical
33	* <i>Pavonia zeylanica</i> (L.) Cav.	Malvaceae	Sittamutti	Roots	GIA-1 (hernia) GUA-1 (laxative)	Powder Juice	Topical Oral
34	<i>Peristrophe bicalyculata</i> Nees.	Acanthaceae	Nagananda	Whole plant	ENT-1 (eye complaints) SMSD-1 (bone fracture)	Juice Paste	Oral Topical
35	<i>Phyllanthus maderaspatensis</i> L.	Euphorbiaceae	Nila-nelli	Leave	SMSD-1 (headache) GIA-2 (diarrhea) LP-1 (jaundice) ED-1 (diuretic)	Paste Decoction Juice Juice	Topical Oral Oral Oral
36	<i>Polycarpaea corymbosa</i> L.	Caryophyllaceae	Nilaisedachi	Leave Flower Stem	RSD-1 (cold) SMSD-1 (swellings) LP-1 (jaundice)	Juice Paste Decoction	Oral Topical Oral
37	* <i>Polygala bulbothrix</i> Dunn.	Polygalaceae	Milakunankai	Leave Root	RSD-2 (asthma) Fvr-1 (fever)	Decoction	Oral
38	* <i>P. jacobi</i> Chandrab.	Polygalaceae	Chankankolakacceti	Root	RSD-2 (cold) SMSD-1 (headache) GUA-1 (laxative)	Decoction Paste Decoction	Oral Topical Oral
39	<i>Portulaca quadrifida</i> L.	Portulacaceae	Siru pasalai	Leaves	CA-1 (cooling) GIA-1 (ulcer) PB-1 (scorpion bite)	Decoction Decoction Decoction	Oral Oral Oral
40	<i>Pseudarthria viscida</i> W. & A.	Fabaceae	Nirmalli	Root	SMSD-1 (rheumatism) RSD-2 (asthma) CSCD-1 (heart diseases) GIA-3 (digestive) ED-2 (diabetes)	Paste Decoction Decoction Decoction Juice	Topical Oral Oral Oral Oral
41	<i>Rhynchosia densiflora</i> DC.	Fabaceae	Adavi kandi	Roots	DID-1 (ring worm)	Paste	Topical
42	<i>Rothia indica</i> (L.) Druce.	Fabaceae	Tooth cup	Leaf	Skin diseases	Paste	Topical
43	<i>Ruellia patula</i> Jacq.	Acanthaceae	Upudali	Whole plant	DID-1 (psoriasis)	Powder	Topical
44	<i>Sansevieria roxburghiana</i> Schult.f.	Agavaceae	Marulkalang	Tender shoots	ENT-1 (earache)	Juice	Oral
45	<i>Sida acuta</i> Burm.f.	Malvaceae	Chittamutti	Whole plant	SMSD-2 (rheumatism) GIA-2 (ulcer) RSD-2 (chest pain) PB-1 (antidote)	Paste Juice Decoction Paste Decoction	Topical Oral Oral Topical Oral

					ED-1 (diuretic) DID-1 (sores)	Paste	Topical
46	<i>S. cordata</i> (Burm.f.) Borss.	Malvaceae	Kurunthotti	Whole plant	SMSD-1 (arthritis) Fvr-1 (fever) GIA-1 (diarrhea) ED-1 (diuretic)	Paste Decoction Decoction Decoction	Topical Oral Oral Oral
47	<i>S. cordifolia</i> L.	Malvaceae	Kurunthotti	Leaves Roots Bark Seeds	PB-1 (antidote) GUA-1 (piles) GIA-2 (dysentery) ED-1 (diuretic) SMSD-1 (elephantiasis)	Paste Paste Juice Powder Decoction	Topical Topical Oral Topical Oral
48	<i>S. rhomboidea</i> Roxb.	Malvaceae	Anakurunthotti	Leaves Roots Stem	SMSD-1 (rheumatism) ED-1 (diuretic) RSD-1 (asthma) GUA-1 (laxative)	Paste Decoction Decoction Decoction	Topical Oral Oral Oral
49	<i>Tephrosia purpurea</i> Pers.	Fabaceae	Kolunji	Whole plant	GIA-3 (diarrhea) LP-2 (urinary disorders) SMSD-1 (rheumatism) RSD-1 (asthma) LP-1 (spleen enlargement)	Decoction Decoction Paste Decoction Decoction Decoction	Oral Oral Topical Oral Oral Oral
50	<i>T. villosa</i> W. & A.	Fabaceae	Avuri	Leaves Roots	SMSD-1 (dryoppsy) ED-1 (hypoglycemic)	Paste Decoction	Topical Oral
51	<i>Tridax procumbens</i> L.	Asteraceae	Vettukkaaya-thalai	Leaves	GIA-2 (diarrhea) PB-1 (antidote)	Juice Paste	Oral Topical
52	<i>Vernonia cinerea</i> (L.) Less.	Asteraceae	Puvamkuruntal	Whole plant	GIA-1 (Indigestion) GUA-1 (piles) Fvr-1 (malarial fever) DID-1 (skin diseases)	Juice Paste Decoction Paste	Oral Topical Oral Topical
53	<i>Waltheria indica</i> L.	Sterculiaceae	Shengalipoondu	Whole plant	DID-2 (skin diseases) RSD-1 (cough) GUA-1 (laxative)	Paste Decoction Decoction	Topical Oral Oral
54	<b>Shrubs</b> <i>Acacia torta</i> Craib.	Mimosaceae	Kallinja	Leaves and bark	GUA-1 (menstrual disorders)	Decoction	Oral
55	<i>Acalypha fruticosa</i> Forssk.	Euphorbiaceae	Seetthathzhazhai	Leaves and root	PB-1 (antidote) GIA-1 (stomachic) GUA-1 (gonorrhoea) ENT-1 (ophthalmia)	Paste Juice Decoction Decoction	Topical Oral Oral Oral
56	<i>Asparagus racemosus</i> Willd.	Asparagaceae	Nili Chedi	Root	GIA-1 (dysentery) GUA-1 (impotency) ED-1 (urinary disorders) SMSD-2 (body pain)	Raw Decoction Decoction Decoction Decoction	Oral Oral Oral Oral Oral
57	<i>Barleria acuminata</i> Nees.	Acanthaceae	Vellai kurinji	Root	Fvr-1 (fever)	Decoction	Oral
58	* <i>Breynia rhamnoides</i> (Retz.) Muell.	Euphorbiaceae	Sithuruvum	Leaves and bark	DID-1 (skin diseases) RSD-1 (cough)	Paste Decoction	Topical Oral
59	<i>Cadaba indica</i> Lam.	Capparidaceae	Vizhuthi	Leaf Flowers	GUA-2 (female sterility) ED-1 (urinary disorders)	Decoction Decoction	Oral Oral
60	<i>Calotropis gigantea</i> R.Br.	Asclepidaceae	Erukku	Whole plant	PB-5 (dog bite) RSD-2 (cough) Fvr-1 (fever) DID-1 (wounds) SMSD-3 (tumors)	Powder Decoction Decoction Paste Paste	Topical Oral Oral Topical Topical

61	<i>*Capparis brevispina</i> DC.	Capparidaceae	Sirakkali	Fruits	CA-1 (body cooling)	Decoction	Oral
62	<i>C. grandis</i> L.f.	Capparidaceae	Pachara	Leaves and bark	SMSD-1 (swelling)	Paste	Topical
63	<i>C. zeylanica</i> L.	Capparidaceae	Adondai	Leaves Root Bark	Fvr-1 (fever) GIA-1 (stomachic) GUA-1 (piles) SMSD-2 (swellings)	Decoction Decoction Paste Paste	Oral Oral Topical Topical
64	<i>Carissa carandas</i> L.	Apocynaceae	Kilaakkaai	Fruits Roots	DID-1 (scabies) GIA-2 (stomachic) PB-1 (anti scorbatic) CSCD-1 (blood pressure) SMSD-1 (hypotensive)	Paste Powder Decoction Decoction Decoction	Topical Topical Oral Oral Oral
65	<i>C. spinarum</i> L.	Apocynaceae	Chirukila	Whole plant	CSCD-1 (cordiotonic activity) GUA-1 (purgative)	Decoction Decoction	Oral Oral
66	<i>Carmona retusa</i> (Vahl.) Mas.	Boraginaceae	Kurinjaa	Whole plant	PB-1 (antidote) GIA-1 (stomachic) RSD-1 (cough) SMSD-1 (skeletal fractures)	Paste Decoction Decoction Paste	Topical Oral Oral Topical
67	<i>Cassia auriculata</i> L.	Caselpinaceae	Avaram	Whole plant	ED-1 (diabetes) GIA-2 (stomachic) DID-1 (skin diseases) SMSD-1 (tumors)	Juice Juice Paste Paste	Oral Oral Topical Topical
68	<i>Chromolaena odorata</i> (L.) R. M. King & H.	Asteraceae	Kamyunist alai	Leaves	DID-1 (cuts and wounds)	Paste	Topical
69	<i>Dodonaea viscosa</i> (L.) Jacq.	Sapindaceae	Unnatharuvi	Leaves, roots, bark, seeds	SMSD-4 (swellings) RSD-1 (cough) DID-1 (cuts and wounds)	Paste Decoction Paste	Topical Oral Topical
70	<i>Erythroxylum monogynum</i> Roxb.	Erythroxylaceae	Sembulichan	Wood, bark	DID-1 (skin diseases) Fvr-1 (fever) GIA-1 (dyspepsia)	Paste Decoction Decoction	Topical Oral Oral
71	<i>*Flueggea leucopyrus</i> Willd.	Euphorbiaceae	Pulanji	Leaves	GIA-1 (intestinal worms)	Juice	Oral
72	<i>Grewia hirsuta</i> Vahl.	Tiliaceae	Kalunnu	Leaves, fruits, roots	Fvr-1 (fever) DID-1 (cuts and wounds) RSD-2 (cough) GIA-1 (dysentery)	Decoction Paste Decoction Decoction	Oral Topical Oral Oral
73	<i>G. flavescens</i> Juss.	Tiliaceae	Semparandai	Drupe	Fvr-1 (fever)	Decoction	Oral
74	<i>G. villosa</i> Willd.	Tiliaceae	Kullai	Roots, fresh bark	GIA-1 (diarrhea) GUA-2 (gonorrhoea) ED-1 (urinary complaints) DID-2 (small pox)	Juice Juice Decoction Paste	Oral Oral Oral Topical
75	<i>Jasminum auriculatum</i> Vahl.	Oleaceae	Uccimalligai	Roots, flowers	DID-3 (burning sensation) GIA-1 (ulcers) CSCD-1 (cardio tonic)	Paste Decoction Decoction	Topical Oral Oral
76	<i>Jatropha glandulifera</i> Roxb.	Euphorbiaceae	Vellaikattukottai	Roots Bark	DID-1 (skin diseases) SMSD-2 (swellings)	Paste Paste	Topical Topical
77	<i>Lantana camara</i> L.	Verbinaceae	Unni chedi	Whole plant	GIA-2 (ulcers) GUA-1 (piles)	Decoction Paste	Oral Topical



					SMSD-3 (tumors) Fvr-1 (fever)	Paste Juice	Topical Oral
78	<i>Mundulea sericea</i> (Willd.) A. Cheval.	Fabaceae	Pilavarum	Root bark	RSD-1 (asthma)	Decoction	Oral
79	<i>Naringi crenulata</i> (Roxb.) Nicolson	Rutaceae	Maga vilvam	Fruits, roots	PB-1 (antidote)	Paste	Topical
80	<i>Opuntia stricta</i> (Haw.) Haw.	Cactaceae	Chappathi kali	Fruits	RSD-1 (cough) SMSD-1 (inflammation) GIA-1 (ulcers)	Juice Paste Decoction	Oral Topical Oral
81	<i>Pavetta indica</i> L.	Rubiaceae	Kattukkarantai	Leaves Wood Roots	GIA-2 (dysentery) GUA-2 (laxative) GH-1 (tonic) SMSD-1 (rheumatism)	Decoction Decoction Juice Paste	Oral Oral Oral Topical
82	<i>Phyllanthus reticulatus</i> Poir.	Euphorbiaceae	Civappuppula	Whole plant	GIA-2 (diarrhea) GH-1 (obesity) DID-3 (skin diseases) ED-1 (diuretic)	Juice Decoction Paste Decoction	Oral Oral Topical Oral
83	<i>Pterolobium indicum</i> A. Rich.	Fabaceae	Kokkichi	Dried flower	Fvr-1 (fever)	Decoction	Oral
84	<i>Randia dumetorum</i> L.	Rubiaceae	Maruk Kalam	Bark Fruits Roots	GIA-3 (diarrhea) GUA-1 (abortion) SMSD-3 (rheumatism) Fvr-1 (fever) RSD-1 (asthma)	Decoction Decoction Paste Decoction Decoction	Oral Oral Topical Oral Oral
85	* <i>R. malabarica</i> L.	Rubiaceae	Sirukarai	Fruits	GIA-1 (ulcers)	Juice	Oral
86	<i>Solanum torvum</i> SW.	Solanaceae	Sundaikkai	Leaves Fruits Roots	RSD-2 (cold) GIA-1 (digestive) LP-2 (spleen enlargement) CSCD-1 (blood pressure) GH-1 (cracks in the feet)	Juice Decoction Decoction Decoction Paste	Oral Oral Oral Oral Topical
87	<i>Tarenna asiatica</i> (L.) Kuntze ex Alston	Rubiaceae	Tharani	Leaves, fruits	DID-2 (skin diseases)	Paste	Topical
88	<i>Tecoma stans</i> (L.) Kunth.	Bignoniaceae	Sonnapatti	Roots	PB-1 (antidote) ED-1 (diuretic) GIA-1 (vermifuge)	Paste Decoction Decoction	Topical Oral Oral
89	* <i>Toddalia asiatica</i> L.	Rubiaceae	Kattu milaku	Whole plant	GH-1 (tonic) RSD-3 (cold) Fvr-2 (malarial fever) DID-1 (wounds) GIA-3 (digestive) ENT-1 (eye problem) PB-1 (insect bite)	Decoction Decoction Decoction Paste Juice Juice Paste	Oral Oral Oral Topical Oral Oral Topical
90	<i>Ventilago maderaspatana</i> Gaertn.	Rutaceae	Surulbattaikkoti	Bark	DID-1 (skin diseases) Fvr-1 (fever) GIA-2 (stomach pain)	Paste Decoction Decoction	Topical Oral Oral
91	<i>Ziziphus oenoplia</i> Mill.	Ramnaceae	Suraimullu	Root bark Fruits	DID-2 (wounds) GIA-2 (digestive) SMSD-1 (muscular pain)	Paste Decoction Paste	Topical Oral Topical
92	<b>Trees</b> * <i>Acacia leucophloea</i> Willd.	Ramnaceae	Velvelam	Leaves Bark Gum	DID-2 (skin diseases) Fvr-1 (fever) GIA-3 (stomach pain) DC-1 (toothache) ENT-1 (mouth)	Paste Decoction Raw Paste Paste	Topical Oral Oral Topical Topical

					ulcer)		
93	<i>A. nilotica</i> (L.) Del.	Mimosaceae	Karuvelam	Bark Gum	DID-2 (skin diseases) ENT-1 (mouth ulcer) LP-1 (liver tonic)	Paste Paste Decoction	Topical Topical Oral
94	<i>Agave americana</i> L.	Agavaceae	Anaikathalai	Leaves Roots Flower stalks	GIA-1 (dysentery) GUA-3 (laxative) Fvr-2 (fever) DID-1 (skin diseases) ED-1 (diuretic)	Juice Decoction Decoction Paste Decoction	Oral Oral Oral Topical Oral
95	<i>Albizia amara</i> (Roxb.) Boiv.	Mimosaceae	Wunja	Leaves Flowers Seeds Gum	ENT-2 (eye diseases) SMSD-3 (inflammations) GIA-3 (dysentery) GUA-1 (piles) CA-1 (body cooling)	Raw Paste Decoction Paste Powder	Oral Topical Oral Topical Topical
96	<i>A. lebbeck</i> (L.) Benth.	Mimosaceae	Siridam	Whole plant	SMSD-3 (anticancer) DID-1 (wounds) ENT-1 (eye diseases) ED-1 (diabetes)	Paste Paste Juice Decoction	Topical Topical Oral Oral
97	<i>Atalantia monophylla</i> Corr.	Rutaceae	Kattu Elumeachi	Leaves and berries oil	SMSD-2 (paralysis)	Paste	Topical
98	<i>Azadirachta indica</i> A. Juss.	Meliaceae	Veppai	Whole plant	CSCD-1 (blood pressure) DID-2 (eczema) RSD-2 (asthma) GIA-1 (ulcers) LP-1 (liver tonic) SMSD-2 (paralysis)	Decoction Paste Decoction Decoction Decoction Decoction	Oral Topical Oral Oral Oral Oral
99	<i>Bambusa arundinacea</i> Willd.	Poaceae	Mungil	Leaves Roots	ED-1 (diuretic) DID-2 (skin diseases) GIA-1 (nausea)	Decoction Paste Decoction	Oral Topical Oral
100	<i>Bauhinia variegata</i> L.	Caesalpiniaceae	Mandare	Leaves Flower buds Root bark	DID-1 (skin diseases) ED-2 (diabetes) GIA-2 (dysentery) RSD-1 (cough) SMSD-2 (tumors) GUA-1 (piles)	Paste Decoction Decoction Raw Paste Paste	Topical Oral Oral Oral Topical Topical
101	<i>Cassia fistula</i> L.	Caesalpiniaceae	Konrai	Whole plant	ED-3 (diabetes) DID-2 (skin diseases) RSD-1 (cough) GIA-3 (ulcers) Fvr-2 (fever) LP-1 (jaundice) CSCD-1 (cardio problem)	Raw Paste Decoction Decoction Decoction Decoction Decoction	Oral Topical Oral Oral Oral Oral Oral
102	<i>C. siamea</i> Lam.	Caesalpiniaceae	Manjal konrai	Aerial parts Roots	ED-1 (diuretic) GIA-1 (intestinal worms)	Juice Decoction	Oral Oral
103	<i>Cassine glauca</i> L.	Celastraceae	Karuvali	Leaves Roots	PB-1 (antidote) SMSD-2 (head ache)	Paste Paste	Topical Topical
104	<i>Chloroxylon swietenia</i> DC.	Rutaceae	Porasu	Leaves young twigs Root bark	SMSD-2 (joint pain) DID-1 (wounds) Fvr-1 (malaria fever)	Paste Paste Decoction	Oral Topical Topical
105	<i>Commiphora berryi</i> (Arn.) Engl.	Burseraceae	Mulkiluvai	Latex	GH-1 (cracks of feet)	Raw	Oral

106	<i>C. caudata</i> (Wight & Arn.) Engl.	Burseraceae	Pachaikiluvai	Fruits	Fvr-1 (fever)	Decoction	Oral
107	<i>Crataeva adansonii</i> DC.	Capparidaceae	Marvilinga	Stem bark	ED-1 (diabetes) SMSD-1 (leprosy)	Decoction Paste	Oral Topical
108	<i>Delonix regia</i> Raf.	Caesalpinaceae	Flame Tree	Flowers Gum, seeds	SMSD-1 (rheumatism)	Paste	Topical
109	<i>Dichrostachys cinerea</i> W. & A.	Mimosaceae	Veduttalam	Tender shoots Roots	SMSD-1 (rheumatism) ED-2 (urinary diseases) ENT- (ophthalmia)	Paste Decoction Decoction	Oral Topical Oral
110	<i>Diospyros montana</i> Roxb.	Ebenaceae	Vakanai	Leaves Pulp of the fruits	GH-1 (cracks of feet)	Paste	Topical
111	<i>Eucalyptus globulus</i> Labill.	Myrtaceae	Karpuramaram	Leaves Oil	CSCD-1 (cardio tonic) SMSD-3 (joint pain) RSD-1 (asthma) GIA-2 (diarrhea) ED-1 (diuretic)	Decoction Paste Decoction Decoction Decoction	Oral Topical Oral Oral Oral
112	<i>Euphorbia antiquorum</i> L.	Euphorbiaceae	Chaturakalli	Roots	RSD-1 (cough) GIA-2 (stomachic) SMSD-1 (rheumatism) DID-1 (wounds)	Decoction Decoction Oil Paste	Oral Oral Topical Topical
113	<i>Ficus benghalensis</i> L.	Moraceae	Aalamaram	Whole plant	ED-1 (diabetes) DID-2 (skin diseases) DC-1 (tooth ache) RSD-1 (cough) GIA-3 (ulcers) SMSD-1 (rheumatism) PB-1 (antidote) GUA-1 (genital diseases)	Decoction Paste Paste Raw Decoction Paste Paste Decoction	Oral Topical Topical Oral Oral Topical Topical Oral
114	<i>Gardenia gummifera</i> L.f.	Rubiaceae	Sirukkambil	Resin	GIA-3 (digestive) CSCD-1 (cardio tonic) Fvr-1 (fever) DID-1 (skin diseases) GH-1 (obesity)	Decoction Decoction Decoction Paste Raw	Oral Oral Oral Topical Oral
115	<i>Hibiscus tiliaceus</i> L.	Malvaceae	Nir paratthi	Leaves Flowers Bark Root	GIA-3 (ulcers) SMSD-1 (rheumatism) DID-1 (wounds) ENT-1 (earache) ED-1 (diuretic)	Decoction Paste Paste Oil Decoction	Oral Topical Topical Topical Oral
116	<i>Holoptelea integrifolia</i> (Roxb.) Planch.	Ulmaceae	Aya	Leaves Bark	GIA-2 (ulcers) SMSD-2 (rheumatism) DID-2 (scabies) ED-1 (diabetes)	Decoction Paste Paste Decoction	Oral Topical Topical Oral
117	<i>Morinda tinctoria</i> Roxb.	Rubiaceae	Mannanunai	Roots	GIA-1 (diarrhea)	Decoction	Oral
118	<i>Peltophorum pterocarpum</i> Backer ex K. Heyne	Fabaceae	Perunkonrai	Bark Seeds	SMSD-2 (muscular pains) GIA-2 (dysentery) DID-1 (sores)	Paste Decoction Paste	Oral Oral Topical
119	<i>Phyllanthus emblica</i> L.	Euphorbiaceae	Nellikaai	Fruits Bark	CSCD-2 (anemia) ENT-1 (eye inflammation) GIA-2 (dysentery) PB-1 (insect bite) LP-1 (jaundice) RSD-1 (cold)	Decoction Juice Decoction Paste Juice Decoction	Oral Oral Oral Topical Oral Oral

120	<i>Pithecellobium dulce</i> Benth.	Fabaceae	Kodukkappuli	Leaves	ENT-1 (eye inflammation)	Decoction	Oral
				Bark	GIA-1 (dysentery) CSCD-1 (blood clotting)	Decoction Paste	Oral Topical
				Seeds	GUA-1 (abortion) ED-1 (diabetes)	Powder Decoction	Topical Oral
121	<i>Pongamia pinnata</i> (L.) Pierre	Fabaceae	Pungai	Whole plant	GIA-4 (diarrhea) ED-1 (diabetes) DID-3 (scabies) LP-1 (sluggish liver)	Juice Juice Paste Decoction	Oral Oral Oral Oral
					RSD-1 (cough) GUA-1 (bleeding piles)	Decoction Paste	Oral Topical
					SMSD-3 (rheumatic pains)	Paste	Topical
122	<i>Premna tomentosa</i> Willd.	Verbinaceae	Nalla nochi	Leaves Root	GIA-2 (diarrhea) ED-1 (diuretic)	Decoction Decoction	Oral Oral
123	<i>P. spicigera</i> L.	Fabaceae	Vanni	Bark	GIA-1 (dysentery) RSD-2 (asthma)	Decoction Decoction	Oral Oral
				Leaves	ENT-1 (eye inflammation)	Juice	Oral
				Seeds	GUA-1 (piles) SMSD-1 (leprosy)	Paste Paste	Topical Topical
124	<i>Santalum album</i> L.	Santalaceae	Chandanam	Heart wood	RSD-2 (cough) GIA-1 (dysentery) LP-1 (jaundice) DID-1 (skin diseases)	Decoction Decoction Decoction Paste	Oral Oral Oral Topical
					Fvr-1 (fever) CSCD-1 (reduce heat-stroke)	Decoction Decoction	Oral Oral
125	* <i>Schleichera trijuga</i> Willd. & Klein.	Sapindaceae	Kumbadiri	Aril	DID-3 (skin diseases) SMSD-1 (rheumatism)	Paste Oil	Topical Topical
				Inflorescence	PB-1 (snake bite)	Decoction	Oral
				Unripe fruit Bark oil	GIA-1 (ulcers) Fvr-1 (malarial fever)	Decoction Juice	Oral Oral
126	<i>Strobilus asper</i> Lour.	Moraceae	Parai maram	Whole plant	DID-2 (skin diseases) SMSD-1 (swelling) GIA-3 (dysentery) Fvr-1 (fever)	Paste Decoction Juice Decoction	Topical Oral Oral Oral
					RSD-2 (bronchitis) CSCD-1 (anemia)	Decoction	Oral
127	<i>Syzygium cumini</i> (L.) Skeels.	Myrtaceae	Naval	Whole plant	GIA-3 (dysentery) Fvr-1 (fever) ED-1 (diabetes) DC-1 (strengthening teeth)	Decoction Decoction Decoction Paste	Oral Oral Oral Topical
					DID-1 (ringworm)	Paste	Topical
128	<i>Tamarindus indica</i> L.	Fabaceae	Puliyamaram	Leaves	GIA-3 (ulcers) SMSD-1 (swelling)	Decoction Paste	Oral Topical
				Fruits	ENT-2 (eye inflammation)	Decoction	Oral
				Seeds Roots	RSD-2 (cough) DID-1 (wound healing)	Decoction Paste	Oral Topical
129	<i>Tectona grandis</i> L.f.	Verbanaceae	Tekku	Whole plant	ED-2 (diabetes) GIA-1 (dysentery) GUA-1 (piles) DID-1 (skin diseases)	Decoction Decoction Paste Paste	Oral Oral Topical Topical
					SMSD-2 (headache) RSD-1 (bronchitis)	Paste Decoction	Topical Oral
130	<i>Terminalia arjuna</i> W. & A.	Combretaceae	Marutu	Twigs	ENT-1 (earache) CSCD-1 (cardio tonic)	Juice Decoction	Oral Oral
				Leaves		Paste	Topical

				Fruit Bark	SMSD-4 (tumors) RSD-2 (bronchitis) GIA-1 (dysentery) GUA-1 (piles)	Decoction Decoction Paste	Oral Oral Topical
131	<i>Thespesia populnea</i> Cav.	Malvaceae	Puvarasu	Whole plant	RSD-2 (asthma) ED-2 (diabetes) DID-3 (skin diseases) GIA-2 (cholera)	Decoction Decoction Paste Decoction	Oral Oral Topical Oral
132	<i>Thevetia peruviana</i> (Pers.) Merr.	Apocynaceae	Ponnarali	Bark Roots Seeds	SMSD-3 (tumors) GUA-2 (abortion) GIA-1 (vomiting)	Paste Decoction Decoction	Topical Oral Oral
133	<i>Ziziphus rugosa</i> Lam.	Rhamnaceae	Totari	Flowers Leaf Bark	GIA-1 (diarrhea) SMSD-1 (swellings) DC-1 (teeth infection)	Decoction Paste Paste	Oral Oral Topical
134	<i>Z. trinervia</i> Roxb.	Rhamnaceae	Elandhai	Leaves	CSCD-1 (purify blood) GUA-1 (venereal affection) GH-1 (cachexia)	Decoction Decoction Decoction	Oral Oral Oral
135	<b>Climbers</b> <i>Abrus precatorius</i> L.	Fabaceae	Gundumani	Leaves Fruits Roots Seeds	RSD-4 (pneumonia) DID-3 (skin diseases) GIA-3 (ulcers) SMSD-1 (nervous disorders) GH-1 (tonic) LP-1 (jaundice) ENT-1 (eye inflammation) ED-1 (diuretic)	Decoction Paste Juice Decoction Decoction Juice Juice Decoction	Oral Topical Oral Oral Oral Oral Oral
136	<i>Argyreia aggregate</i> (Roxb.) Choisy	Convolvulaceae	Silky Morning Glory	Leaves	RSD-1 (cough)	Decoction	Oral
137	<i>A. pomacea</i> Choisy	Convolvulaceae	Silky Morning Glory	Ripe fruits	GIA-1 (ulcers)	Decoction	Oral
138	<i>Aristolochia indica</i> L.	Aristolochiaceae	Isvaramuli	Leaves Roots	GIA-3 (ulcers) PB-1 (snake bite) DID-2 (itching)	Decoction Juice Juice	Oral Oral Oral
139	<i>Canavalia gladiata</i> DC.	Fabaceae	Segapputampattai	Fruits Seeds	DID-3 (itching) GIA-2 (ulcers)	Paste Decoction	Topical Oral
140	<i>Canavalia mollis</i> W. & A.	Fabaceae	Segapu	Leaves	DID-1 (wound healing)	Paste	Topical
141	<i>Cardiospermum canescens</i> Wall.	Sapindaceae	Mudakathan	Leaves	LP-1 (jaundice) SMSD-1 (stiffness in legs)	Decoction Paste	Oral Topical
142	<i>C. halicacabum</i> L.	Sapindaceae	Mudakathan	Roots Leaves Seeds	SMSD-1 (rheumatism) GH-1 (tonic) RSD-1 (asthma) Fvr-1 (fever) GUA-1 (piles)	Paste Decoction Decoction Decoction Paste	Topical Oral Oral Oral Topical
143	<i>Celastrus paniculatus</i> Willd.	Celastraceae	Valuluvai	Bark Leaves Seeds	GUA-1 (abortion) SMSD-2 (paralysis) Fvr-1 (fever) GUA-1 (piles)	Powder Paste Decoction Paste	Topical Topical Oral Topical
144	<i>Cissampelos pareira</i> L.	Menispermaceae	Ponmusutai	Root Stem Leaves	RSD-1 (cough) GIA-1 (diarrhea) Fvr-1 (malarial fever) ED-1 (urinary troubles) DID-1 (skin diseases)	Decoction Decoction Decoction Decoction Paste	Oral Oral Oral Oral Topical
145	<i>Cissus quadrangularis</i> L.	Vitaceae	Pirandai	Whole plant	SMSD-1 (bone fracture)	Paste	Topical

					GUA-1 (menstrual disorder) RSD-1 (asthma) GIA-1 (digestive) DID-1 (wound healing)	Juice Decoction Decoction Paste	Oral Oral Oral Topical
146	<i>Clitoria ternatea</i> L.	Fabaceae	Kakkanam	Leaves Seeds Roots	RSD-1 (asthma) GIA-1 (ulcers) SMSD-1 (rheumatism) Fvr-1 (fever)	Decoction Decoction Paste Decoction	Oral Oral Topical Oral
147	<i>Coccinia indica</i> Wight & Arn.	Cucurbitaceae	Kovai	Whole plant	DID-3 (skin diseases)	Paste	Topical
148	<i>Cocculus hirsutus</i> (Diels.)	Menispermaceae	Kattukkoti	Roots Leaves	DID-3 (skin diseases) SMSD-1 (rheumatism) ED-1 (urinary troubles) GUA-1 (menstrual disorder)	Paste Paste Decoction Decoction	Topical Topical Oral Oral
149	<i>C. pendulous</i> Diels.	Menispermaceae	Kattukkoti	Leaves	SMSD-1 (antitumor) ENT-1 (nose bleeding)	Decoction Decoction	Oral Oral
150	<i>Daemia extensa</i> R. Br.	Asclepiadaceae	Uttamani	Whole plant	RSD-3 (asthma) Fvr-1 (fever) GUA-1 (menstrual disorder) GIA-1 (digestive)	Decoction Decoction Decoction Decoction	Oral Oral Oral Oral
151	<i>Gymnema sylvestre</i> R. Br.	Asclepiadaceae	Sirukurinjan	Whole plant	Fvr-1 (fever) GIA-1 (digestive) LP-1 (jaundice) ED-1 (diabetes)	Decoction Juice Decoction Decoction	Oral Oral Oral Oral
152	<i>Hemidesmus indicus</i> R. Br.	Asclepiadaceae	Nannari	Roots Leaves Stem	Fvr-1 (fever) GIA-4 (dysentery) ED-1 (diabetes) RSD-3 (asthma)	Decoction Juice Decoction Decoction	Oral Oral Oral Oral
153	<i>Ichnocarpus frutescens</i> R. Br.	Apocynaceae	Paravalli	Whole plant	GIA-1 (stomach pain) DC-1 (tooth ache) ED-1 (diabetes) LP-1 (kidney stone) SMSD-2 (swellings) Fvr-1 (fever) CSCD-1 (blood purifier)	Decoction Paste Decoction Decoction Paste Decoction Juice	Oral Topical Oral Oral Topical Oral Oral
154	<i>Ipomoea nil</i> (L.) Roth.	Convolvulaceae	Kakkattan	Seeds	SMSD-2 (swellings) Fvr-1 (fever) DID-4 (skin diseases) RSD-1 (asthma)	Paste Decoction Paste Decoction	Topical Oral Topical Oral
155	<i>I. staphylina</i> R. & S.	Convolvulaceae	Onaankodi	Latex	DID-1 (wound healing)	Paste	Topical
156	<i>Kedrostis foetidissima</i> (Jacq.) Cogn.	Cucurbitaceae	Nurakvel	Leaves Fruits	RSD-1 (asthma) GUA-1 (piles)	Decoction Paste	Oral Topical
157	<i>Leptadenia reticulata</i> Eetv.	Asclepiadaceae	Palaikkodi	Whole plant	GH-1 (tonic)	Juice	Oral
158	<i>Passiflora foetida</i> L.	Passifloraceae	Siruppunaikkali	Aerial parts Fruits Roots	SMSD-1 (anticancer) CSCD-1 (memory power) DID-1 (skin diseases) RSD-1 (asthma)	Paste Decoction Paste Decoction	Topical Oral Topical Oral

159	<i>Rivea hypocrateriformis</i> Choisy.	Convolvulaceae	Musuttai kodi	Leaves	RSD-1 (asthma)	Decoction	Oral
160	<i>Sarcostemma intermedium</i> Dcne.	Asclepiadaceae	Kodikalli	Dried stem Root	PB-1 (antidote) GIA-1 (emetic)	Paste	Topical
161	<i>Secamone emetica</i> R. Br.	Apocynaceae	Ankaravali	Roots	GIA-1 (emetic) acid	Powder	Topical
162	* <i>Solena amplexicaulis</i> (Lam.) Gandhi.	Cucurbitaceae	Pulivanchi	Whole plant	GIA-1 (digestive) RSD-2 (asthma) SMSD-2 (swellings)	Decoction Decoction Paste	Topical Oral Oral
163	<i>Tiliacora acuminata</i> Miers.	Menispermaceae	Perunkattukkoti	Roots	PB-1 (antidote)	Juice	Oral

\*New claims

**Table 3**  
**Ingredients added for the preparation of herbal medicines by the Irula healers.**

S. No.	Botanical name	Other plants added	Other ingredients added
<b>Herbs</b>			
1	<i>Acalypha indica</i> L.	<i>Cassia occidentalis</i> , <i>Piper nigrum</i> and <i>Piper betle</i> (diabetes).	Milk
2	<i>Achyranthes aspera</i> L.	<i>Evolvulus alsinoides</i> and <i>Mollugo pentaphylla</i> (dysentery).	Coconut oil
3	<i>Aerva lanata</i> Juss.	<i>Acalypha indica</i> and <i>Cassia occidentalis</i> (diabetes).	Milk
4	<i>Alternanthera pungens</i> Kunth.	<i>Desmodium triflorum</i> , <i>Piper nigrum</i> and <i>Piper betle</i> (gonorrhoea).	Nil
5	<i>Amaranthus viridis</i> L.	Nil	Nil
6	<i>Barleria prionitis</i> L.	Nil	Coconut oil
7	<i>Blepharis maderaspatensis</i> (L.) B.	<i>Leucas aspera</i> , <i>Piper nigrum</i> and <i>Piper betle</i> (gas trouble).	Nil
8	<i>Boerhavia diffusa</i> L.	<i>Leucas aspera</i> , <i>Piper nigrum</i> and <i>Piper betle</i> (abdominal pain).	Milk
9	<i>Borreria hispida</i> K. Sch.	<i>Piper nigrum</i> and <i>Piper betle</i> (tooth worm).	Salt
10	<i>Cassia occidentalis</i> L.	<i>Sida acuta</i> , <i>Piper nigrum</i> and <i>Piper betle</i> (rheumatism).	Coconut oil
11	<i>Cleome viscosa</i> L.	<i>Cassia auriculata</i> , (cardiac disorders).	Coconut oil
12	<i>Crotalaria verrucosa</i> L.	<i>Allium cepa</i> and <i>Murraya koenigii</i> (blood purification).	Egg white yoke and coconut oil
13	<i>Croton bonplandianum</i> Baill.	<i>Cardiospermum halicacabum</i> and <i>Curculio orchids</i> (dyspepsia).	Honey
14	<i>Cynodon dactylon</i> Pers.	<i>Hemidesmus indicus</i> and <i>Vetiveria zizanioides</i> (stomach ache and tonic)	Coconut oil
15	<i>Desmodium triflorum</i> DC.	<i>Cassia auriculata</i> and <i>Cynodon dactylon</i> (diarrhea).	Milk and honey
16	<i>Euphorbia hirta</i> L.	Nil	Milk and honey
17	<i>Evolvulus alsinoides</i> L.	<i>Piper nigrum</i> and <i>P. betle</i> (bronchitis).	Coconut oil
18	<i>Heteropogon contortus</i> Beauv.	<i>Curcuma aromatica</i> and <i>Madhuca longifolia</i> (diuretic).	Milk
19	<i>Hibiscus micranthus</i> L.f.	<i>Curcuma aromatica</i> and <i>Piper nigrum</i> (laxative)	Nil
20	<i>Justicia tranquebariensis</i> L. f.	<i>Piper nigrum</i> and <i>Tephrosia purpurea</i> (asthma and gas trouble)	Sugar
21	<i>Leucas aspera</i> Spr.	Nil	Sugar, milk and honey
22	<i>Malvastrum coromandelianum</i> Garcke.	<i>Allium cepa</i> and <i>Piper betle</i> (dysentery)	Milk
23	<i>Mollugo pentaphylla</i> L.	<i>Cocculus hirsutus</i> and <i>Madhuca longifolia</i> (stomachic).	Milk
24	<i>Odenlandia umbellata</i> L.	<i>Cuminum cyminum</i> and <i>Madhuca longifolia</i> (poisonous bites).	Coconut oil
25	<i>Pavonia zeylanica</i> (L) Cav.	<i>Piper nigrum</i> , <i>Allium sativum</i> and <i>Tephrosia purpurea</i> (hernia).	Coconut oil, sugar and honey
26	<i>Peristrophe bicalyculata</i> Nees.	<i>Curcuma aromatica</i> , <i>Piper nigrum</i> and <i>P. betle</i> (eye complaints).	Coconut oil, sugar and honey
27	<i>Phyllanthus maderaspatensis</i> L.	<i>Acacia catechu</i> and <i>Curculio orchids</i> (diarrhea).	Salt
28	<i>Polycarpaea corymbosa</i> L.	Nil	Coconut oil
29	<i>Portulaca quadrifida</i> L.	<i>Hemidesmus indicu</i> and <i>Cymbopogon citratus</i> (cooling).	Coconut oil
30	<i>Sansevieria roxburghiana</i> Schult.f.	<i>Curcuma aromatica</i> (earache).	Milk and coconut oil
31	<i>Sida acuta</i> Burm.f.	<i>Curcuma aromatica</i> , <i>Cardiospermum halicacabum</i> and <i>C. canasense</i> (rheumatism).	Honey
32	<i>S. rhomboidea</i> Roxb.	<i>Curcuma aromatica</i> (asthma).	Milk
33	<i>Tephrosia purpurea</i> Pers.	<i>Syzygium cuminii</i> , <i>Begonia malabarica</i> , <i>Piper nigrum</i> and <i>P. betle</i> (urinary disorders).	Milk
34	<i>Tridax procumbens</i> L.	Nil	Coconut oil
35	<i>Vernonia cinerea</i> (L.) Less.	<i>Curcuma aromatica</i> and <i>Citrus limon</i> (skin diseases)	Coconut oil
<b>Shrubs</b>			
36	<i>Acacia torta</i> Craib.	<i>Curcuma aromatica</i> and <i>Citrus limon</i> (menstrual disorders).	Milk
37	<i>Acalypha fruticosa</i> Forssk.	<i>Allium sativum</i> and <i>Phyllanthus amarus</i> (stomachic).	Salt
38	<i>Asparagus racemosus</i> Willd.	Nil	Milk
39	<i>Breynia rhamnoides</i> (Retz.) Muell.	<i>Phyllanthus emblica</i> and <i>Ficus racemosa</i> (skin diseases).	Coconut oil
40	<i>Cadaba indica</i> Lam.	Nil	Coconut oil
41	<i>Calotropis gigantea</i> R.Br.	<i>Allium cepa</i> , <i>A. sativum</i> and <i>Murraya koenigii</i> (dog bite).	Coconut oil

42	<i>Carissa spinarum</i> L.	<i>Ocimum sanctum</i> , <i>Piper nigrum</i> and <i>P. betle</i> (cardiac problem).	Coconut oil
43	<i>Carmona retusa</i> (Vahl.) Mas.	<i>Alpinia galanga</i> and <i>Cyanotis axillaris</i> (stomachic)	Nil
44	<i>Cassia auriculata</i> L.	<i>Alangium salviifolium</i> and <i>Tephrosia purpurea</i> (diabetes).	Coconut oil
45	<i>Dodonaea viscosa</i> (L.) Jacq.	<i>Curcuma aromatica</i> (cuts and wounds).	Coconut oil
46	<i>Erythroxylum monogynum</i> Roxb.	<i>Piper nigrum</i> and <i>P. betle</i> (dyspepsia).	Coconut oil
47	<i>Grewia hirsuta</i> Vahl.	<i>Curcuma aromatica</i> , <i>Piper nigrum</i> and <i>P. betle</i> (dysentery).	Coconut oil
48	<i>Jasminum auriculatum</i> Vahl.	<i>Acacia catechu</i> , <i>Terminalia arjuna</i> , <i>T. bellerica</i> and <i>Curculio orchids</i> (cardio tonic).	Nil
49	<i>Jatropha glandulifera</i> Roxb.	<i>Anisomeles malabarica</i> and <i>Curcuma aromatica</i> (skin diseases).	Coconut oil
50	<i>Lantana camara</i> L.	<i>Curcuma aromatica</i> (tumors).	Coconut oil
51	<i>Mundulea sericea</i> (Willd.) A. Cheval.	<i>Pedaliium murex</i> and <i>Cardiospermum halicacabum</i> (asthma)	Nil
52	<i>Naringi crenulata</i> (Roxb.) Nicolson	Nil	Coconut oil
53	<i>Opuntia stricta</i> (Haw.) Haw.	Nil	Coconut oil
54	<i>Pavetta indica</i> L.	<i>Curcuma aromatica</i> , <i>Piper nigrum</i> and <i>P. betle</i> (tonic).	Milk
55	<i>Phyllanthus reticulatus</i> Poir.	<i>Justicia adhatoda</i> and <i>Hemidesmus indicus</i> (skin diseases).	Coconut oil
56	<i>Pterolobium indicum</i> A. Rich.	<i>Piper nigrum</i> (fever).	Honey
57	<i>Randia dumetorum</i> L.	<i>Ocimum sanctum</i> , <i>Cleome monophylla</i> and <i>Piper nigrum</i> (fever).	Nil
58	<i>Solanum torvum</i> SW.	<i>Curcuma aromatica</i> (blood pressure).	Milk/honey
59	<i>Tarenna asiatica</i> (L.) Kuntze ex Alston	<i>Curculio orchids</i> and <i>Cissus quadrangularis</i> (skin diseases).	Coconut oil
60	<i>Tecoma stans</i> (L.) Kunth.	<i>Piper nigrum</i> and <i>P. betle</i> (diuretic)	Nil
61	<i>Toddalia asiatica</i> L.	<i>Pavetta indica</i> and <i>Curcuma aromatica</i> (digestive)	Sugar/salt
62	<b>Trees</b> <i>Acacia leucophloea</i>	<i>Curcuma aromatica</i> (mouth ulcer).	Gingelly oil and Neem oil
63	<i>A. nilotica</i>	<i>Terminalia arjuna</i> , <i>T. bellerica</i> and <i>Cynodon dactylon</i> (liver tonic).	Coconut oil
64	<i>Agave americana</i>	<i>Allium sativum</i> , <i>Canarium strictum</i> and <i>Curcuma aromatica</i> (skin diseases).	Salt
65	<i>Albizia amara</i>	<i>Curcuma aromatica</i> , <i>Piper nigrum</i> and <i>P. betle</i> (eye diseases).	Salt
66	<i>A. lebbeck</i>	Nil	Coconut oil
67	<i>Azadirachta indica</i>	<i>Curcuma aromatica</i> (blood pressure).	Sugar and Milk
68	<i>Bauhinia variegata</i>	<i>Curcuma aromatica</i> , <i>Piper nigrum</i> and <i>P. betle</i> (scorpion bite)	Milk and honey
69	<i>Cassia fistula</i>	<i>Curculio orchids</i> , <i>Terminalia bellerica</i> and <i>Cyanotis axillaris</i> (cardio problem).	Honey
70	<i>Cassine glauca</i> L.	Nil	Honey
71	<i>Commiphora caudata</i>	<i>Curcuma aromatica</i> , <i>Piper nigrum</i> and <i>P. betle</i> (fever).	Coconut oil
72	<i>Delonix regia</i>	<i>Curcuma aromatica</i> , <i>Piper nigrum</i> and <i>P. betle</i> (rheumatism).	Honey
73	<i>Dichrostachys cinerea</i>	<i>Curcuma aromatica</i> , <i>Piper nigrum</i> and <i>P. betle</i> (rheumatism).	Honey
74	<i>Eucalyptus globulus</i>	<i>Curculio orchids</i> , <i>Terminalia bellerica</i> and <i>Cyanotis axillaris</i> (cardio tonic).	Honey
75	<i>Euphorbia antiquorum</i>	<i>Curcuma aromatica</i> , <i>Piper nigrum</i> and <i>P. betle</i> (rheumatism).	Milk
76	<i>Ficus benghalensis</i>	<i>Adhatoda vasica</i> , <i>Eucalyptus globules</i> and <i>Ocimum basilicum</i> (genital diseases).	Nil
77	<i>Hibiscus tiliaceus</i>	<i>Cardiospermum halicacabum</i> and <i>Cissus quadrangularis</i> (earache).	Milk
78	<i>Peltophorum pterocarpum</i>	Nil	Honey
79	<i>Pongamia pinnata</i>	Nil	Milk/honey
80	<i>Premna tomentosa</i>	<i>Curcuma aromatica</i> (diarrhea).	Coconut oil, Milk/honey
81	<i>Santalum album</i>	<i>Cleome viscosa</i> and <i>Costus speciosus</i> (skin diseases).	Coconut oil
82	<i>Strebulus asper</i>	Nil	Coconut oil, salt, milk/honey
83	<i>Tamarindus indica</i>	<i>Syzygium cuminii</i> , <i>Ocimum sanctum</i> , <i>Piper nigrum</i> and <i>P. betle</i> (swelling).	Coconut oil
84	<i>Terminalia arjuna</i>	<i>Curculio orchids</i> , <i>Terminalia bellerica</i> and <i>Cyanotis axillaris</i> (cardio tonic).	Milk/honey
85	<i>Ziziphus rugosa</i>	Nil	Coconut oil
86	<b>Climbers</b> <i>Abrus precatorius</i>	<i>Curcuma aromatica</i> , <i>Piper nigrum</i> and <i>P. betle</i> (eye diseases).	Coconut oil
87	<i>Aristolochia indica</i> L.	<i>Rauwolfia serpentina</i> , <i>Piper nigrum</i> and <i>P. betle</i> (snake bite)	Coconut oil
88	<i>Cardiospermum canescens</i>	<i>Piper nigrum</i> and <i>P. betle</i> (jaundice).	Milk/honey
89	<i>Celastrus paniculatus</i>	<i>Ocimum sanctum</i> , <i>Piper nigrum</i> and <i>P. betle</i> (fever).	Honey and coconut oil
90	<i>Cissampelos pareira</i> L.	Nil	Coconut oil
91	<i>Cissus quadrangularis</i> L.	<i>Cleome viscosa</i> , <i>Cynodon dactylon</i> , <i>Euphorbia hirta</i> , <i>Ocimum sanctum</i> and <i>Piper nigrum</i> (menstrual disorder).	Butter milk/cow milk
92	<i>Clitoria ternatea</i> L.	<i>Curcuma aromatica</i> , <i>Piper nigrum</i> and <i>P. betle</i> (rheumatism).	Coconut oil
93	<i>Coccinia indica</i> Wight & Arn.	<i>Piper nigrum</i> and <i>P. betle</i> (skin diseases).	Honey
94	<i>Cocculus hirsutus</i> (Diels.)	<i>Piper nigrum</i> and <i>P. betle</i> (skin diseases).	Pungam oil, egg white yoke and coconut oil
95	<i>Daemia extensa</i> R. Br.	<i>Ocimum sanctum</i> , <i>Piper nigrum</i> and <i>P. betle</i> (asthma).	Asafoetida
96	<i>Gymnema sylvestre</i> R. Br.	<i>Curcuma aromatica</i> , <i>Piper nigrum</i> and <i>P. betle</i> (diabetes).	Milk and honey
97	<i>Hemidesmus indicus</i> R. Br.	<i>Commiphora caudate</i> , <i>Ocimum sanctum</i> and <i>Piper nigrum</i> (fever).	Gingelly oil
98	<i>Ipomea staphylina</i> R. & S.	<i>Curcuma aromatic</i> and <i>Helicteres isora</i> (wound healing).	Egg white yoke and coconut oil
99	<i>Passiflora foetida</i> L.	<i>Curcuma aromatica</i> , <i>Piper nigrum</i> and <i>P. betle</i> (anticancer).	Milk
100	<i>Sarcostemma intermedium</i> Dcne.	<i>Allium sativum</i> and <i>Piper nigrum</i> (emetic).	Castor oil
101	<i>Secamone emetica</i> R. Br.	Nil	Milk and honey
102	* <i>Solena amplexicaulis</i> (Lam.) Gandhi.	<i>Curcuma aromatica</i> , <i>Piper nigrum</i> and <i>Ocimum sanctum</i> (asthma)	Coconut oil and honey



**Figure 1**  
**Location of the study site.**



**Figure 2**  
**Field data sheet for collection of ethnobotanical information from Irula tribals of Maruthamalai hills.**

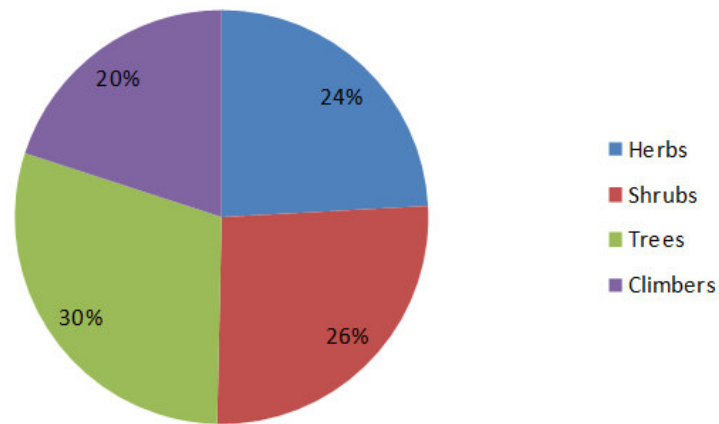
DEPARTMENT OF BOTANY  
KONGUNADU ARTS AND SCIENCE COLLEGE, COIMBATORE - 641 029.

FIELD DATA SHEET

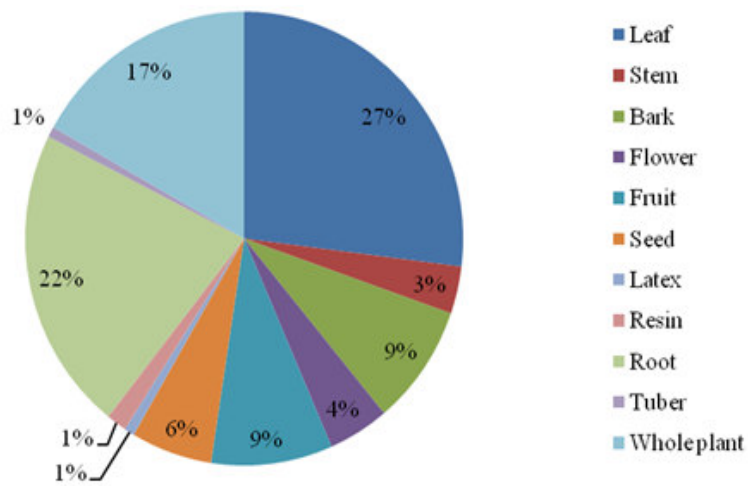
Field No. 4

1. Voucher No.	:	65
2. Date	:	19/09/2014
3. Altitude	:	720m above msl.
4. Latitude	:	76° 93' N
5. Study area	:	Maruthamalai
6. Type of Forest	:	Dry deciduous
7. Locality	:	Maruthamalai
8. District	:	Coimbatore
9. State	:	Tamil Nadu
10. Soil	:	Sandy loam
11. Species	:	<i>Cassia spinarum</i> L.
12. Family	:	Apocynaceae
13. Habit	:	Shrub
14. Vernacular name	:	Chirukula
15. Language	:	Tamil
16. Phenophase	:	Fruiting
17. Taxonomic description	:	Woody stem, green, outer terminal cone flowers white - colour, fruit heavy, roundish red & black
18. Uses	:	Cardiac activity
19. Collector	:	S.S. Tamilgali
20. Tribal/local healers	:	Irula

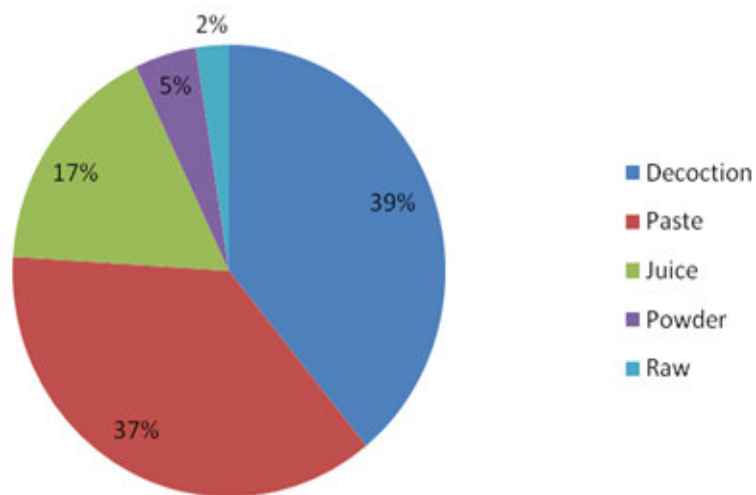
**Figure 3**  
*Per cent life-forms of medicinal plants used by Irulas in Maruthamalai hills.*



**Figure 4**  
*Percent plant parts used for medicine preparation.*



**Figure 5**  
*Percent form of medicine preparation by Irula tribe.*



## RESULTS AND DISCUSSION

### Documentation of ethnomedicinal knowledge

The present study revealed the use of 163 species of plants distributed in 130 genera belonging to 49 families which were commonly used by Irula traditional healers for the treatment of 89 types of ailments included in 15 groups. The prominent families consisted the medicinal species was Fabaceae with 21 species, followed by Euphorbiaceae with 11 species, Rubiaceae with 10 species, Malvaceae with 9 species and Acanthaceae with 7 species. Asclepiadaceae, Caesalpiniaceae, Cappariaceae and Convolvulaceae families were present with 6 species each, Apocynaceae and Mimosaceae with 5 species each, Amaranthaceae, Asteraceae, Menispermaceae, Rhamnaceae, Rutaceae and Sapindaceae were with 4 species each, Cucurbitaceae, Poaceae, Tiliaceae and Verbenaceae were with 3 species each, Agavaceae, Burseraceae, Celastraceae, Lamiaceae, Moraceae, Myrtaceae and Polygalaceae were with 2 species each. Remaining families were represented by 1 species each (Table-2). The medicinal uses of plants gathered in the study were compared with the previously published information from Maruthamalai hills and also from certain other parts of Western Ghats of Tamil Nadu. The study found that there were 13 claims from the plants viz., *Borreria hispida*, *Orthosiphon thymiflorus*, *Pavonia zeylanica*, *Polygala bulbothrix*, *P. jacobi*, *Breynia rhamnoides*, *Capparis brevispina*, *Flueggea leucopyrus*, *Randia malabarica*, *Toddalia asiatica*, *Acacia leucophloea*, *Schleichera trijuga* and *Solena amplexicaulis* were reported for the first time from the study area (Table 2).

### Life form and parts used

Trees were the primary source of medicine (30%) followed by shrubs (26%), herbs (24%) and climbers (20%) (Fig. 3). It may be due to high degree of curing property of tree species for various ailments experienced by the Irula healers in Maruthamalai hills. Similar trend of higher usage of true species for medicinal purposes by tribal community is already reported.<sup>40</sup> Among the different parts used, the leaves (27%) were most frequently used for the preparation of medicine solely or in combination with other parts followed by roots (22%), whole plant (17%), bark and fruit (9% each), seeds (6%), flowers (4%), stem (3%), latex, resin and tubers (1% each) (Fig. 4). Many indigenous communities throughout the world also utilized mostly leaves for the preparation of herbal medicines<sup>41-43</sup>. The reason why leaves were used mostly is that they are collected very easily than underground parts, flowers, fruits, etc.<sup>44</sup>

### Method of preparation and mode of administration of plants

The preparation and utilization of plant parts were grouped into five categories (Fig. 5). Of these, most commonly used method of preparation was decoction (39%), followed by paste (37%), juice (17%), powder (15%) and raw (2%). Preparation of paste for the treatment of ailments is a common practice among the tribal communities in the world.<sup>41,45-47</sup> The paste was prepared by grinding the fresh or dried plant parts with oil or water. The powder was prepared by grinding of

shade dried plant parts. The decoction was obtained by boiling the plant parts in water until the volume of the water reduced to minimum or required amount. The inhalation was done by the burning of plant parts and inhaled the smoke through nose or mouth.<sup>48</sup> Internal uses (63%) were predominant over external or topical uses (37%). For topical use, the most important methods used were direct application of paste or with oil and mostly dealt with diseases like skin, cuts and wounds, poison bites, rheumatism, body pain, swellings and headache. Most of the medicines were given orally which were also suggested by some other workers.<sup>49,50</sup>

### Ingredients added

The medicinal preparations were made out of a single plant part or in combination of several plant parts. The present study revealed that both single mode (61 plants) and multiple modes (102 plants) of preparations were involved in the medicinal preparations. The Irula traditional healers used more than one plant parts for the preparation of medicine in the treatment of single or multiple ailments. The frequent use of multiple plant remedies among the traditional healers could be attributed to the belief of synergic reactions where one plant could have a potentiating effect than other.<sup>44</sup> It is believed that the multiple prescriptions contain a range of pharmacologically active compounds and poly-herbal treatment has more healing power than single medicinal plant, since each medicinal plant used in the mixture is a remedy.<sup>42</sup> The Irula traditional healers too frequently use some adjuvants such as honey, cow milk, butter milk, hot water and jiggery to improve the acceptability and medicinal property of certain remedies. The oils of castor, coconut, gingelly, mustard, neem and sesamum were commonly used for the preparation of paste or medicated oil (Table -3). The local healers were using specific plant parts and specific dosages for the treatment of diseases and the dose given to the patient depends on age, physical status and health conditions.

## CONCLUSION

The present study revealed that the knowledge and usage of traditional medicine for the treatment of various ailments among the Irula tribes is still a major part of their life and culture. They have a strong belief in the efficacy and success of traditional medicine and the results of the study provide evidence that the medicinal plants continued to play an important role in the healthcare system of this community. This treasure of information is gradually vanishing in the near future due to lack of interest among the younger generations of tribal people as well as their tendency to migrate to cities for luxuriant jobs. Thus, the present study would be useful in preventing the loss of ethnomedicinal traditions of Irula tribe communities. Thirteen new claims which were recorded from the study area showed that still much can be learned from investigating herbals available abundantly in the forests. These plants may indicate the possible occurrence of valuable phytochemical compounds and it requires a search for potential new drugs to treat various ailments.

## ACKNOWLEDGEMENT

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## CONFLICT OF INTEREST

The authors declare no conflict of interest.

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