Ethnobotany of Irulas in Gingee Hills, Tamilnadu, India

M. ThamacinArulappan*[1], S. John Britto[1], Ignace Kindo[1]

1. *The Rapinat Herbarium and Centre for Molecular Systematics, St. Joseph's college (Autonomous), Tiruchirapalli, India.*

ABSTRACT

The present study highlights the living condition and the ethnomedicinal knowledge of the *Irulas*in the Gingee hills, Villupuram District, Tamilnadu. Extensive field surveys were conducted in seven villages in Gingeetaluk. Living conditions and ethnobotanical knowledge were taken through personal interview. A total of 16 species of 11 families were documented. The present study observed that the *Irulas*in Gingee hills have very sound knowledge of medicinal values of plants. This type of studies may help in the pharmacological research in various dimensions.

Keywords: Ethnobotany, ethnomedicinal, irulas, pharmacognosy

INTRODUCTION

India is one of the countries in the world with a large tribal population. The tribals in India constitute nearly 8.2% (84.3 million) of the India's total population. Of them 91.7% are living in rural areas and 8.3% in urban areas[1]. More than half of the above tribes were concentrated in the States of Madhya Pradesh (14.5%), Maharashtra (10.17%), Orissa (9.66%), Gujarat (8.87%), Rajasthan (8.42%) and Jharkhand (8.4%) and State wise *Mizoram* (98%), Meghalaya (90%), Nagaland (84%), Arunachal Pradesh (68%) has tribals followed by Manipur (38%), Sikkim (28%), Madhya Pradesh (24%), Orissa (22 %) and Assam (21%). Madhya Pradesh has the largest concentration of tribal population in India[2].

Tribes in Tamilnadu have had a special place in Tamil history. According to Tamilnadu Government there were 36 identified tribal communities living in Tamilnadu. Total population of Scheduled Tribes in Tamilnadu was about 6.5 lacs in 2001. Just like tribes of other Indian states, tribal community in Tamilnadu had been historically marginalized and oppressed by the dominant communities. They exploited tribal lands, resources, minerals and forests. Their customary rights over natural resources such as forests, cultural identity, traditional knowledge including intellectual property rights, cultural heritage and traditional wisdom had been continuously put at stake due to the development paradigm of globalization, liberalization and privatizations. This paper studies the living condition and ethnomedicinal knowledge of *Irular* in Gingee hills at Gingeetaluk of Villupuram district. A special effort is also made to study the living conditions of *Kuravar* (gipsys) in the same taluk.
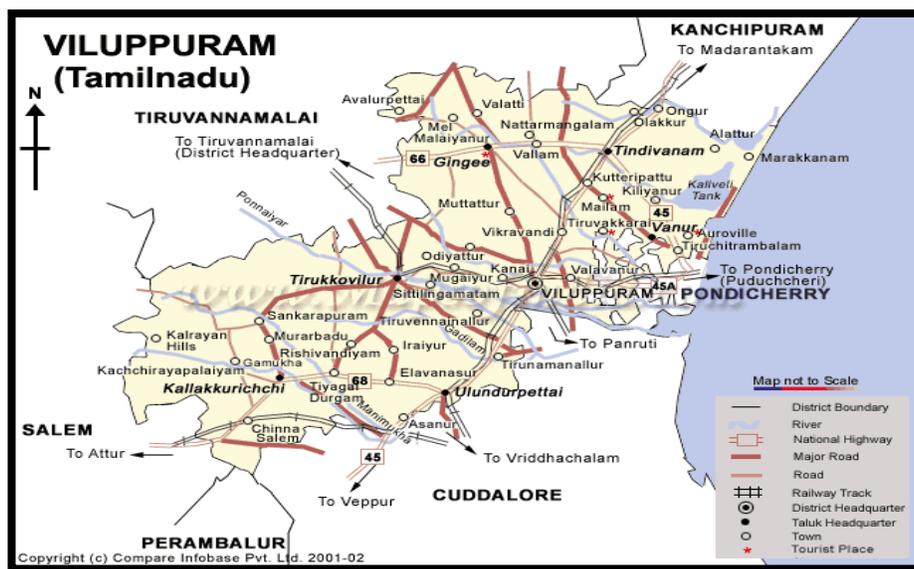
Irular

The early 20th century anthropological literature states that the *Irular* belong to the Negrito or Negroid race which is one of the six main ethnic groups that adds to the race mosaic of India. Negroids from Africa were the oldest people to have come to India[2, 3]. The word '*Irular*' derived from Tamil word called "*Irul*" which means 'darkness'. '*Irular*' means those who are in darkness. Curly hair and dark complexion is their prominent feature.*Irulas* form the largest tribal group which is about more than one lakh in 2001[2, 4].The present Census (2011) records the presence of *Irulas* only as a lac only. There is a decreasing trend in population of the *Irulas*. At present, there are only 23,116 *Irular* households in Tamil Nadu[5].*Irulas* were mainly concentrated in north-eastern part of Tamilnadu namely Chengalpattu, Kanchipuram, Thiruvannamalai, Thiruvallur and Villupuram district. Beside Salem and Dharmapuri, some *Irulas*are found in Western Ghats of Nilgiri hills. The present study in Gingeetaluk alone records around 2,600 *Irulas* living in seven

villages.

Gingee hills

Gingee is a heritage town bounded by hills. The town falls under the geographical coordinates of 12°.15'N and 79°.25'E., above the Mean Sea Level of 30.45m. The town comprises of a number of small and large hills, rocky outcrops are found here and there. Gingee Forest Range consists of seven Reserve Forests and one Reserve Plains. They are: Gangavaram Reserve Forest (2681.87 ha), Thandavasamudram Reserve Forest (318.49 ha), Poolanjimalai Reserve Forest (236.94 ha), Pakkamalai (2263.81 ha), Siruvadi (1360.16 ha), Muttakadu (1289.72 ha), Padipallam (1457.28 ha) and Karai Reserve Plains (686.75 ha).All these Reserve Forests are located in the south west direction from Gingee towns. There are lots of isolated hillocks present and they are the offshoot of Eastern Ghats. There are 26 villages situated around these Reserve Forest areas. The town has hot, dry climate almost throughout the year. The maximum temperature and the minimum temperature of the town are 36 to 30 C respectively. The town receives rain mainly during the months of October, November through the North East monsoon. On an average the town receives 700mm of rainfall.

District map of Villupuram, Tamilnadu, India[6]

Irulas in Gingee hills

Irulas of Gingee hills are mainly concentrated in Paruthanthangal, Vadukkanparai, Perunkattur, Devathanampettai, Kudarapattu, Thandavasamuthiram and Gengavaram. They are now found in patches in the aforementioned villages. They are living in cemented houses constructed by the government. Except a few most of them are landless and have been reduced to the status of wage

labourer. Art, music, dance and religion are essential parts of the lives of *Irulas*. These*Irulas* are adept in handling snakes and work as guides in the forest. They speak a typical dialectics which is a mixture of Tamil and Malayalam or Telugu. They fully depend on plant produces and wild animals for their livelihood. Earlier they were hunters and they have known for their special expertise in snake trapping. Their life-style is slowly changing from their original forest dweller existence to the mainstream. Chewing betel leaves were common among *Irular* men and women. Smoking beedi is very common and regular use of alcohol is bourgeoning among *Irular*men. The census report (2011) in Gingeetaluk states the literacy rate is only 1 % while the rest are illiterates.

Kuravas in Gingee hills

A special attempt was made to study the *Kuravas*in Gingee hills during the expedition into the hills. They are living in patches and are found mostly in M.G.R Nagar and Konai near Gingee town. They are living in cemented houses constructed by the government. They live in nuclear family type. Their main occupation is making ornaments and selling them nearby towns. The economic status is very pathetic. Their daily income is hardly a hundred rupees. Some *Kuravar* men are snake and monkey charmers. They use these animals to earn their livelihood. Some children receive minimum education up to eight standard and while the rest of the communities are illiterates. The present study reveals that they are originally tribes of Maharashtra. They speak a typical dialectics which is a mixture of Marathi and Telugu. They are fluent in Tamil language too.

MATERIAL AND METHODS

Since *Irulas* are aboriginal people and illiterate, therefore a standard structural questionnaire approach was not used to get the information about the medicinal plants and ethnomedicinal practices, but rather informal communication was done. However, a set of standard questionnaires is maintained privately to obtain information on medicinal plants with their local name, parts used, mode of preparation and mode of administration. A special emphasis is also made as part of the field survey to gain information on medicinal plants and consumption from the *Kuravas*. The informants were selected based on their knowledge of medicinal plants either for self-medication or for treating others. About 54 *Irulas* and *Kuravas* were interviewed. Out of 54, 40 are men and 14 are women informants. This present study analyzes the data collected from the study area by applying the quantitative ethnobotanical devices, use-value (UV), factor informant consensus (Fic) and fidelity level (Fl%). Some useful photographs were taken for better identification of the medicinal plants (Table 3).

Questionnaire

Table 3: Socio-Demographic Profile of Irulas and Kuravas in GingeeTaluk, Villupuram

Sl. No	Profile of Irular / Kuravar Tribes	Domain / Categories	N	
			F	**%**
1	Gender	Male	40	74
		Female	14	26
2	Age	0 – 11	-	-
		12-19	-	-
		20-30	25	46
		31-50	18	33
		51-70	07	13
		71- 80	04	8
		81 -above	-	-
3	Education	Illiterates	50	93
		Primary school	04	7
		Middle school	-	-
		High school	-	-
4	Occupation	Agriculture	20	37
		Construction work	-	-
		Daily labour	26	48
		Hunting / snake trapping, etc	8	15
5	Income in Rs.	< 500	-	-
		1000 – 2000	40	74
		2000 - above	14	26
6	Family type	Nuclear	44	81
		Joint	10	29
		Extended	-	-
7	Members in the family	1	-	-
		2	12	22
		3 -above	42	78
8	Type of house	Thatched with mud	-	-
		Concrete	54	100
9	Working hours	8 hrs	38	70
		8-10hrs	16	30
		Unemployed	-	-
10	Indebtedness	< 500	-	-
		1000	25	46
		2000 -above	09	17
11	Main source of borrowing	Local people	12	22
		Shop brokers	08	15
		Others	-	-
12	Reasons for borrowing	Education	30	55
		Festival	08	15
		Health	10	19

		Daily needs	06	11
13	Family life	Highly satisfied	44	81
		satisfied	08	15
		Unsatisfied	-	-
		Regular fights	02	4
14	Health life	Satisfied	30	88
		Sickly	04	12
		Very sickly	-	-
15	Social life	Good	50	93
		Bad	04	7
16	Religion	Worship of spirits	20	37
		Worship of deities/others	34	63

Data analysis

The data collected through interview of the informants was analyzed using three different quantitative tools namely use value (**UV**), factor informant consensus (**Fic**) and fidelity level (**Fl%**). The relative importance was calculated employing the use-value of Phillips *et al.,*[7, 8]a quantitative measure for the relative importance of species known locally.

$$UV = \Sigma U/n$$

where U is the number of use-reports cited by each informant for a given species and n refers to the total number of informants. Use values are high when there are many use-reports for a plant, implying that the plant is important, and approach zero (0) when there are few reports related to its use. The use value, however, does not distinguish whether a plant is used for single or multiple purposes.

To test homogeneity of knowledge about the medicinal plants, the factor informant consensus (F*ic*)[7,9, 10]was used. Before performing the analysis, all the ailments were broadly classified into various categories on the basis of Heinrich *et al.*, (1998).[9, 11] The F*ic*was calculated as:

$$F{ic} = \frac{nur - nt}{nur - 1}$$

where *nur*refers to the number of the use-reports for a particular use category and *nt* refers to the number of taxa used for a particular use category by all informants. F*ic* values are low (near 0) if plants are chosen randomly or if there is no exchange of information about their use among informants and approach one (1) when there is a well-defined selection criterion in the community and/or if information is exchanged between informants[8,9,12,13.]Because many plant species may be used in the same category, it is interesting to determine the mist preferred species used in the

treatment of particular ailment which can be done with the fidelity level (Fl%) of Friedman *et al.,*[8, 9, 14]:

$$Fl(\%) = \frac{Np}{N} \times 100$$

Where Np is the number of use-reports cited for a given species for a particular ailment and N is the total number of use-reports cited for any given species. High Fl value (near 100%) is obtained for plants which almost all use reports refer to the same way of using it, whereas low Fl value is obtained for plants that are used for many different purposes.

RESULTS AND DISCUSSION

Characteristics of Informants

74% males and 26% female informants were the age group between the age group of 25-75yrs. About 93% of them are illiterates and 7% among of them had some basic schooling. Both *Irulas* and *Kuravas* have some knowledge of the uses of plants curing various ailments. Comparatively *Irulas* have better knowledge of traditional medicine than the *Kuravas*. The information was collected from 21 yrs to 80 yrs old of the tribes (Table 1).

Table 1: Medicinal plant knowledge of the informants

INFORMANTS	IRULAS (44)			KURAVAS (10)		
Age group	Male	Female	%	Male	Female	%
21-30	8	6	32	3	1	40
31-40	13	2	34	2	1	30
41-50	8	1	20	1	1	20
51-60	1	3	10	1	-	10
61-70	1	-	2	-	-	
71-80	1	-	2	-	-	
KNOWLEDGE OF MEDICINAL PLANTS						
Less than 3 years	10	3	30	-	-	-
3-6 years	14	4	40	1	-	10
6-10 years	2	2	9	1	2	30
10-15 years	1	1	5	2	1	30
15-20 years	3	1	9	1	-	10
20 and more	2	1	7	2	-	20
No knowledge	-	-		-	-	
PROFESSION / OCCUPATION						
Wage labourer	16	10	60	4	2	60
Farmer	12	2	34	-	1	10
Animal charmer	2	-	6	3	-	30
Herbal practitioner	-	-		-	-	

Floristic characteristics of medicinal plants

A total number of 16 species of flowering plants belonging to 11 families were observed to be medicinally important plants for curing various ailments in the study area. Majority of the taxa were found growing in wild forms. In terms of number of species used, Lamiaceae appeared to be the most dominant family used for curing diseases followed by Rutaceae, Liliaceae and Euphorbiaceace. Six families are represented by a single genus that is used in curing the disease (Chart 1).

Medicinal value was observed either in the whole plant or was confined to one or more plant parts. In terms of percentage usage of organs, leaves were observed to be of utmost medicinal importance (73%) followed by root (20%) and flower (7%). Various modes of administration of medicines were observed viz. about 80% oral and 20% external application (Chart 2).

Use-value of medicinal plants

On the basis of use-value (UV) the most important medicinal species used by *Irulars*in the study site were *Ocimum sanctum* (100%), *Andrographispaniculata* (100%), *Cleistanthuscollinus* (100%), *Hemidsmusindicus* (100%), *Ormocarpumsennoides* (100%) *Cassia auriculata*(100 %), *Sapindusemarginatus* (100 %) and *Zehneriascabra* (100 %). The other most use-value of plants include*Aloe vera* (89%), *Phyllanthusmaderaspatensis*(87%) and *Leucasaspera* (83%).

Factor of informant consensus

As many as 8 plant species are used to treat respiratory ailments. One each of the rest of the medicinal plants is reported to cure epilepsy, stomach pain, urinary problem, bone fracture, scabies and snake bite. The commonly occurring respiratory ailments were classified into 6 different ailment categories according to Heinrich *et al.,* (1998). The maximum species (10) were used to cure common cough and cold followed by chronic cough (1) and asthma (1) (Chart 3).

Fidelity level

Fidelity level values in this study area varied from 26 % to 100%. For the better accuracy, species mentioned by less than 10 informants were not considered in the final analysis. *Ocimum sanctum* (100%), *Andrographispaniculata* (100%), *Cleistanthuscollinus* (100%), *Hemidsmusindicus* (100%), *Ormocarpumsennoides* (100%) *Cassia auriculata*(100 %), *Sapindusemarginatus* (100 %) and *Zehneriascabra* (100 %), *Aloe vera* (89%), *Phyllanthusmaderaspatensis*(87%) and *Leucasaspera* (83%) were the species with high level fidelity level and used to the commonly occurring respiratory diseases in the study area (Table 2).
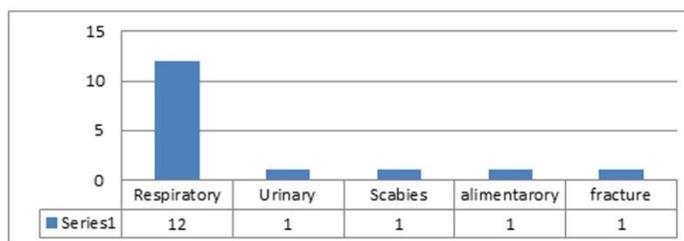
Chart 1: Distribution of medicinal plants
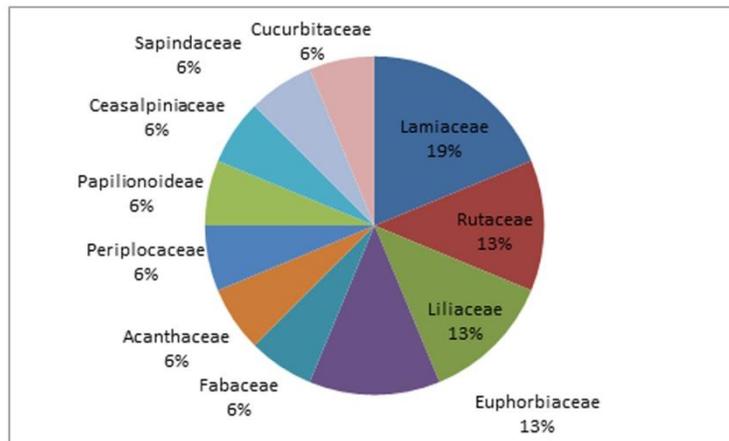
Chart 2: Plant parts used for the treatment
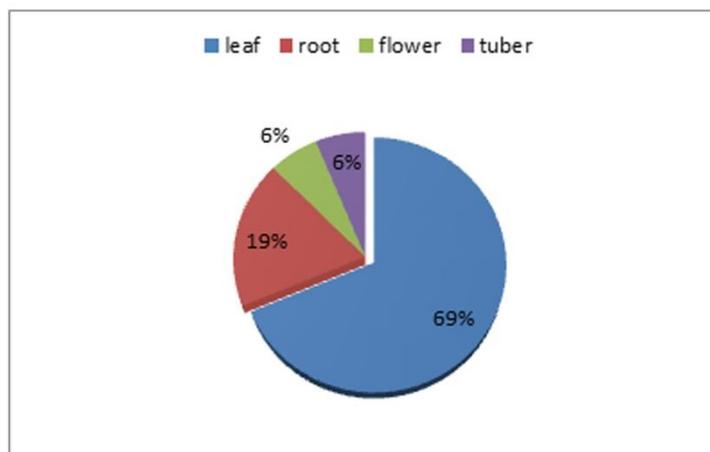
Chart 3: Medicinal plants used to cure diseases

CONCLUSION

The *Irulas* population of Gingeetaluk of Villupuram district had a good knowledge of ethnomedicinal plants as they were using 16 medicinally important plants to cure various ailments. Middle aged informants had greater knowledge of ethnomedicinal plant species than the younger informants. Since the *Irulas*are one of the oldest inhabitants to receive sustenance from nature,

they established very good rapport with nature and living organisms. Their profound and intimate relationship with nature gives them a unique recognition as earthly beings and of the earth. Such study of them is very helpful in discovering the pharmacognostic values of the medicinal plants and also knowhow of the conservation of the harmony of the plant kingdom.

REFERENCE

1. Internet Source: Government of India, Census Report of the Indian Population, 2001, New Delhi, India.

   (http://www.educationforallinindia.com/final-population-2001-data.html   assessed   on 11.08.2014.)

2. Sinu.E&UdayaMahadevan. Living conditions of Irula Tribes in Devathanampet Village, GingeeTaluk, Villupuram District, Tamilnadu M.A Social Work Dissertation submitted to Loyola College (Autonomous), Madras University. 2002.

3. N. Dhatchanamoorthy, N. Ashok Kumar and K. Karthik, Ethnomedicinal plants used by Irular tribes in Javadhu hills of Southern Eastern Ghats, Tamilnadu, India, Journalof Current Research and Development 2013; 2 (1): 31-37.

4. Rann Singh Mann. Tribes of India. Ongoing Challenges, Published by M.D. Publications Pvt. Ltd. New Delhi 1996.

5. Internet Sources: Census Report of the Tamil Nadu Population. Government of Tamil Nadu, 2011.

   (http://censusindia.gov.in/2011-prov-

   results/data_files/tamilnadu/3.Tamil%20Nadu_PPT_2011-BOOK%20FINAL.pdf)

6. Internet   Sources: Villupuram   District   Map,   Tamilnadu,   India 2014.(http://www.mapsofindia.com/maps/tamilnadu/districts/viluppuram.htm)   assessed on11.08.2014).

7. Phillips, O., Gentry, A.H., Reynel, C., Wilki, P., Gavez-Durand, C.B. Quantitative ethnobotany and Amazonian Conservation. Conservation Biology 1994; 8: 225-248.

8. Bhatia Harpreet., Sharma Yas Pal., Manhas R.K., and Kumar Kewal. Ethnomedicinal plants used by the villagers of district Udhampur, J&K, India Journal of Ethnopharmacology 2014; 151: 1005-1018.

9. ThamacinArulappan M and John Britto, S. Respiratory Problems and their home remedies-A survey in GingeeTaluk, Tamil Nadu, India, International Journal of Biology, Pharmacy and Allied Sciences 2014; 3(6): 927-940.

10. Musa, M.S., Abdelrasool, F.E., Elsheikh, E.A., Ahmed, L.A.M.N., Mahmoud, A.L.E., Yagi, S.M. Ethnobotanical study of medicinal plants in the Blue Nile State, South –eastern Sudan, Journal of Medicinal Plants Research 2011; 5 (17): 4287 – 42 97.

11. Heinrich, M., Ankli, A., Frei, B., Weimann, C., Sticher, O. Medicinal plants in Mexico; Healers' consensus and cultural importance. *Soc. Sci. Med.* 1998; 47: 1863 – 1875.

12. Gazzaneo, L.R.S., Lucena, R. F. P., Albuquerque, U.P., (): Knowledge and use of medicinal plants by local specialists in a region of Atlantic Forest in the state of Pernambuco (Northeastern Brazil).*Journal of Ethnobiol.Ethnomed.*2005;1: 1746 – 4269-1-9.

13. Sharma, R., Manhas, R.K., Magotra, R. Ethnoveterinary remedies of diseases among milk yielding animals in Kathua, Jammu and Kashmir, India. *Journal of Ethnopharmacology*. 2012;141 (1), 265-272.

14. Friedman, J., Yaniv, Z., Dafni, A., Palewitch, D. A preliminary classification of the healing potential of medicinal plants, based on a rational analysis of an ethnopharmacological field survey among Bedouins in the Negev desert, Israel. *Journal of Ethnophamacology,*1986;16: 275 – 287.