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## **Evolutionary Medicine Of Kani Tribal's Botanical Knowledge In Agasthiayamalai Biosphere Reserve, South India**

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### **ABSTRACT**

Agasthiayamalai Biosphere Reserve in Tirunelveli zones have had five Kani tribal settlement surveys of ethnomedicinal utilization with more than 480 species of which only 70 species are been reported during the field study 2006-2007. Collected ancestral knowledge was documented in database format by the software Visual Basic 6.0 and M.S Access. Kani tribes reveal that they are capable of treating various diseases. Exploitation and documentation of traditional medicine is essential for the future. Such study will be useful to understand the role and importance of the tribal botanical knowledge in the conservation of medicinal plants of this area.

**Key:** Agasthiayamalai, Kani tribes, Software, Medicinal plants.

### **INTRODUCTION**

The most ancient and celebrated treatises on Hindu medicine are no doubt the Ayurveda. India also possesses a great heritage of other ancient systems of medicine such as Siddha, Unani and Homeopathy. Nearly 2500 species of plants are used in one way or other by some of these systems. In addition to these traditional systems, there also exists in India a vast knowledge of tribal and folk medicine, which utilize around 7500 species of plants as medicine. Some of the ethno botanically important species have also provided leads for production of modern drugs by pharmaceutical companies. It is estimated that in India 90% of the prescriptions contain plant

products. Ayurvedic and other traditional system of Indian medicines fully depend on wild plants for preparation of drugs.

The World Health Organization (WHO) estimated that 80% of the population of developing countries still rely on traditional medicines, mostly plant drugs, for their primary health care needs. Demand for medicinal plant is increasing in both developing and developed countries due to growing recognition of natural products being non-toxic, having no side-effects, easily available at affordable prices. The medicinal plant sector has traditionally occupied an important position in the socio cultural, spiritual and medicinal area of rural and tribal families (WHO., 2002- 2005).

India is known for ancient civilizations and deep-rooted traditions. It is also known for its rich diversity, both cultural as well as biological (Ravikumar et al., 2000). Totally 427 tribal communities are in India (Kala., 2005) having 36 states of Tamilnadu with scheduled tribes. The different ethnic groups settled throughout this place have their own way of life style even in using the plant resources.

Bioprospecting is the search of useful products derived from bioresources. The useful products may be chemical compounds, genes, micro & macro organisms and other valuable products that are useful in medicinal, industrial, agricultural and food sectors. Traditional medicine is also known as “Evolutionary medicine.” (Pamplona roger., 2000).

## **OBJECTIVES**

- ❖ This study focuses on the collection of primary data relevant to the experience of the Kani tribes of the Agasthiyamalai especially in the region of Tirunelveli.
- ❖ To establish a database of the plants used by Kani tribes with special reference to their indigenous traditional knowledge.
- ❖ To create awareness to the local communities about the conservation strategies of these valuable genetic resources.

## **METHODOLOGY**

Agasthiyamalai Biosphere Reserve (Kalakakad Mundanturai Tiger Reserve-**Map 1**) located in Tirunelveli zones have Kani tribes practicing traditional medicine were interviewed in five settlements (**Figure 1**), Servalar, Agasthiar Kanikudiyiruppu, Mayilar, Periyamayilar and Inchikuzhi (Henry et al., 1984). The native plants used for the preparation of crude drugs and their administrations

along with doses were recorded through 15 field trips carried out in 52 days during 2006-2007 academic year. Plant voucher specimens were matched, deposited (Diane Bridson and Leonard forman., 1992) in Xavier's College Herbarium (XCH)-Tirunelveli. Plants were identified by using relevant floras (Gamble., 1935 & 1994; Gopalan and Henry., 2000; Mohanan and Sivadasan., 2002; Nair and Nayar., 1986 & 1987). Collected information was documented in software using Visual Basic 6.0 and MS Access.

## **RESULTS AND DISCUSSION**

Plants have been used as traditional medicine for several thousand years. Traditional knowledge is a divine gift to humanity. Tribal's, even today, depend on wild plants and animals for their livelihood. Kani tribals are primarily a semi-romantic community and originated from Kerala. They have slowly shifted and settled in the forest of Tirunelveli region. The ethnomedicinal survey held on tribal doctors suggest they use 70 species. The ethnomedicines of the species are arranged in alphabetical order. The database includes the Botanical name, Family, Vernacular name (Viswanathan et al., 2006), Habit, Description, Parts used, Ethnobotanical use, Ethnomedicinal use, Herbal formulation, Dosage and Pictures of the plants. Sample software screens (**Figure 2**) and Medicinal Plants (**Table 1**) are given. Identity and their various indigenous technological knowledge are also presented here (**Figure 3**).

Traditional knowledge is not protected within the patent system as it stands today. So, it needs for us to protect the biological traditional knowledge. The "turmeric case" highlights the problems faced by India in preventing bio-piracy. The recording of traditional knowledge seeks to reduce the possibility of bio-piracy, but looks to future legislation to effectively protect the rights of the people. Some important structural changes based on sound legal footing are proposed, which can be easily incorporated within the present database, and would go a long way in preventing bio-piracy and protecting the interests of the knowledge-holders (Sangeeta Udgaonkar., 2002).

## **SUMMARY AND CONCLUSION**

The present population has little knowledge about the medicinal plants of the area because most of the knowledgeable, older persons have passed away and the younger ones are not as informed

of traditional methods. However, as in the past, some empirical knowledge of medicinal plants among the tribes continues to be developed and transmitted orally from one generation to the next. The deterioration of the wild flora of this area is to be blamed on population pressure, forest fires, overgrazing, and browsing.

### **ACKNOWLEDGEMENTS**

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### **Map 1. Area of the study**



Figure 1. Kani tribal settlements

**Settlements**



**Figure 2. Sample software screens**

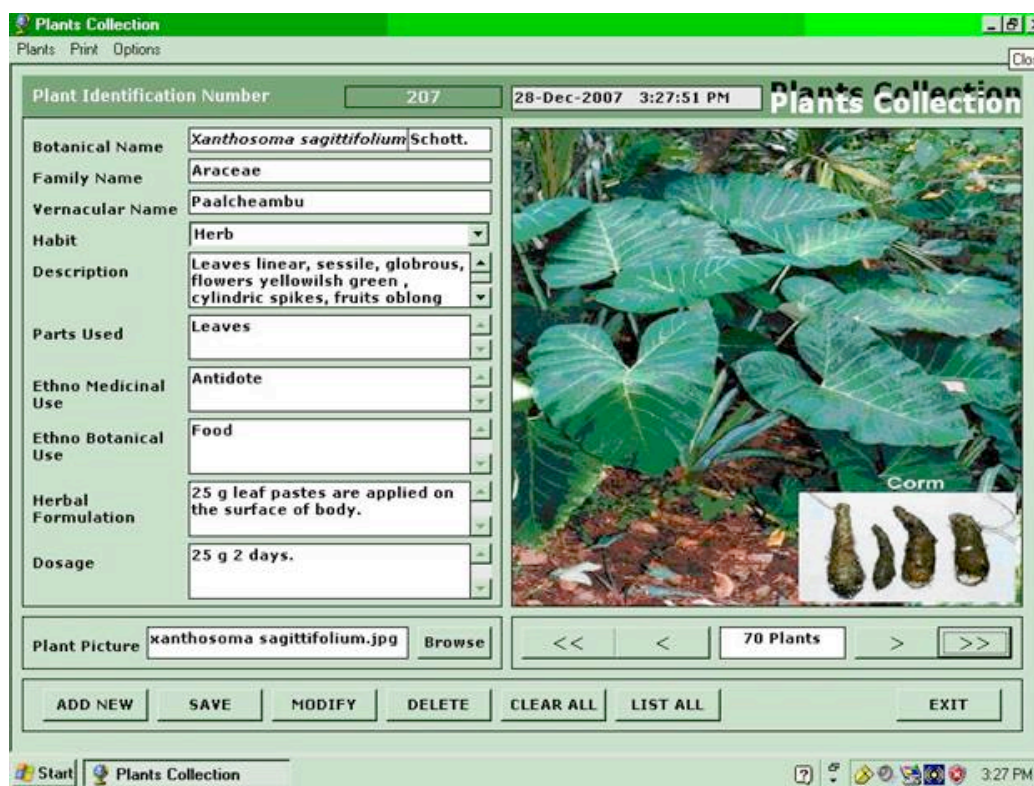


Figure 3. Indigenous technological knowledge



**Indigenous Technological Knowledge of Kanitribals**



**Architecture**



**Fire making**



**Agriculture**



**construction of wooden Bridge**



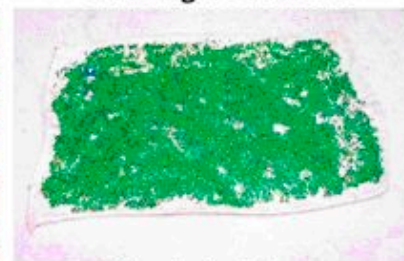
**Peper cultivation**



**Hunting Instrument**



**Furniture**



**Dehydrated Peper**

**Table 1.** Medicinal Plants used as Ethnomedicine.

S.N O	BOTANICAL NAME	VERNACULAR NAME	FAMILY	HERBAL FORMULATION
<b>Antidote</b>				
1.	<i>Achyranthes aspera</i> L.	Naayuruvi	Amaranthaceae	Grains are ground and eaten.
2.	<i>Xanthosoma sagittifolium</i> Schott.	Paalcheambu	Araceae	Leaf pastes are applied on the surface of body.
<b>Asthma</b>				
3.	<i>Martynia annua</i> L.	Nagathali	Martyniaceae	Leaf paste is consumed with milk.
<b>Body temperature</b>				
4.	<i>Borassus flabellifer</i> L.	Panaimaram	Arecaceae	Toddy regulates body temperature.
5.	<i>Cocos nucifera</i> L.	Thennu	Arecaceae	Toddy regulates body temperature.
<b>Cough and Cold</b>				
6.	<i>Elettaria cardamomum</i> (L.) Maton.	Ellakai	Zingiberaceae	Leaves are boiled with water, applied on the face.
7.	<i>Abutilon indicum</i> (L.) Sweet.	Thuthi	Malvaceae	Leaf juice is administered orally.
8.	<i>Datura discoalor</i> Bernh.	Kattu karuomathai	Solanaceae	Leaf juice is consumed.
9.	<i>Plectranthus amboinicus</i> (Lour.) Spreng	Omaovali.	Lamiaceae	The seeds are inhaled to reduce cough.
10.	<i>Anisomeles malabarica</i> (L.) R.Br. ex Sm.	Sampalthmbai	Lamiaceae	Leaf pastes are consumed with hot water.
11.	<i>Alpinia calcarata</i> Roscoe.	Kattusitharthai	Zingiberaceae	Plant juice is consumed.
12.	<i>Justicia adhatoda</i> L.	Adadodai	Acanthaceae	Leaf juice is drunk.
<b>Cuts and Wounds</b>				

- |                         |   |                           |               |  |
|-------------------------|---|---------------------------|---------------|--|
| 13.                     | <i>Acacia nilotica</i><br>(L.) Willd ex Del.            | Karuvelam                 | Mimosaceae    | Flower juice applied on the surface.                     |
| 14.                     | <i>Argemone mexicana</i> L.                             | Aathparappi               | Papaveraceae  | Plant twig resins are applied on the surface.            |
| 15.                     | <i>Centratherum anthelminticum</i> Kuntze.              | Malaigambi                | Asteraceae    | Leaf decoction is applied on wounds.                     |
| 16.                     | <i>Celastrus paniculatus</i> Willd.                     | Peruthi                   | Celastraceae  | Leaf juice is applied on the body.                       |
| 17.                     | <i>Tridax procumbens</i> L.                             | Kattunilamparathipachilai | Asteraceae    | Leaf juice is applied on the surface.                    |
| 18.                     | <i>Eupatorium odoratum</i> L.                           | Anavathanchedi            | Asteraceae    | Leaf powder is mixed with hot oil is applied externally. |
| <b>Energy stimulant</b> |   |                           |               |  |
| 19.                     | <i>Trichopus zeylanicus</i> Gaertn.                     | Arokiyapachai             | Dioscoreaceae | Leaves are consumed.                                     |
| 20.                     | <i>Cucurbita moschata</i> (Decne ex Lam.)Decne ex Poir. | Poosani                   | Cucurbitaceae | The fruit is consumed to increase weight.                |
| 21.                     | <i>Cyperus rotundus</i> L.                              | Koraipullu                | Cyperaceae    | The tubers are consumed for cattle.                      |
| <b>Fever</b>            |   |                           |               |  |
| 22.                     | <i>Baccaurea courtallensis</i> (Wight) Muell.Arg.       | Maraootipazham            | Euphorbiaceae | The pericarp of tender fruit is consumed.                |
| <b>Giddiness</b>        |   |                           |               |  |
| 23.                     | <i>Adenostemma lavenia</i> (L.) Kuntze.                 | Kattusiruvanthanpatchilai | Asteraceae    | Plants paste is consumed with milk.                      |

24. *Asystasia chelonoides* Nees. Kattumaniculiki pachillai Acanthaceae The leaves and flowers are consumed with honey.
25. *Derris benthamii* (Thw.) Thw Kattusirukodipachillai Fabaceae Leaves and flowers are eaten with honey.

**Hair tonic**

26. *Helicteres isora* (L.) W & A. Valampuri Sterculiaceae Fruits are boiled with coconut oils applied on the head.
27. *Eclipta prostrata* (L.) L. Karisilanganni Asteraceae The leaf extract is boiled and applied on the hair.
28. *Hibiscus rosa-sinensis* L. Chembaruthi Malvaceae The raw petals are eaten.
29. *Lawsonia inermis* L. Maruthani Lythraceae Leaf juices boiled the extract is applied with hair oil.

**Menstrual disorder**

30. *Aloe vera* (L.) Burm.f. SothuKatthalai Liliaceae The outer layer is peeled and the inner fleshy layer is eaten directly.
31. *Terminalia arjuna* (Roxb.) ex DC.Wight & Arn. Marutha maram Combretaceae Park juice is consumed.

**Mumps**

32. *Azadirachta indica* A. Juss. Vemppu Meliaceae Leaf cures mumps.

**Nemeticidal**

33. *Carica papaya* L. Pappalipayam Caricaceae Fruits are consumed.

**Piles**

34. *Amorphophallus paeoniifolius* (Dennst.) Nicol. Karaunaikilangu Araceae The rhizomes are consumed twice a day.
- Rheumatism**
35. *Aegle marmelos* Corr. Vilvam Rutaceae The fruit resin is used.  
Leaves are boiled and juice is mixed with pinch of pepper powder.
36. *Amaranthus spinosus* L. Mullukirai Amaranthaceae Rhizome juice is used.
37. *Allium cepa* L. Ulli Liliaceae
- Scabies**
38. *Acalypha indica* L. Kuppaimeni Euphorbiaceae Leaves are ground and applied on the sores of scabies.
39. *Acacia sinuate* (Lour.) Merr. Chiyagai Mimosaceae The pod powder is applied on the scabies.
40. *Adiantum raddianum* Presl, Tent. Nilasuralipatchilai Adiantaceae Plant extract is applied on the surface of body.
- Scorpion and Insect bites.**
41. *Hemiontis arifolia* (Fern) Vattasuruli Heminoitidaceae Whole plants are also used.
- Sexual stimulant**
42. *Moringa oleifera* auct. Murungamaram Moringaceae Entire plant is a sexual stimulator.
- Skin diseases**
43. *Copadessa baccifera* (Roth.) Mig. Siruvemmpu Meliaceae Leaves juice is applied on the affected parts.
44. *Alternanthera sessilis* (L.) R.Br. ex DC. Ponnaganni Amaranthaceae Leaf extract is used.
45. *Bacopa monnieri* (L.) pennell. Neerbrabmi Scrophulariaceae Whole plant is eaten for rejuvenation of the skin.

**Skin Irritating**

- |     |   |            |             |   |
|-----|---|------------|-------------|---|
| 46. | <i>Scleropyrum pentandrum</i> (Dennst.) | Mulkirayan | Santalaceae | Whole plant parts are applied externally.     |
| 47. | <i>Alsotonia scholaris</i> R.Br.        | Eliaipalai | Apocynaceae | Leaf pastes are applied on the Skin Swelling. |

**Stomach disorder**

- |     |  |                            |                |  |
|-----|--|----------------------------|----------------|--|
| 48. | <i>Bidesns pilosa</i> L.                                       | Kuthapachilai              | Asteraceae     | Leaf juices are consumed with milk.              |
| 49. | <i>Acorus calamus</i> L.                                       | Vayambu                    | Araceae        | Dried tuber is eaten with honey.                 |
| 50. | <i>Nigella sativa</i> L.                                       | Karugesiragum              | Ranunculaceae  | The seeds are consumed.                          |
| 51. | <i>Canna orientalis</i> Roscoe.                                | Vaalai kovai               | Cannaceae      | Tubers are consumed.                             |
| 52. | <i>Maranta arundinacea</i> L.                                  | Koovaikilangu              | Marantaceae    | Tubers are consumed.                             |
| 53. | <i>Tabernaemontana heyneana</i> Wall.                          | Kattusirumanthapatchilai   | Apocynaceae    | Fruits are laxative.                             |
| 54. | <i>Biophytum intermedium</i> Wight.                            | Paarainellipachalai        | Oxalidaceae    | Plant paste is consumed with water.              |
| 55. | <i>Psychotria ophioxylodes</i> (Wall. ex Roxb) Thw.            | Kaattusirukaapipatchillai. | Rubiaceae.     | Leaves and tender fruits are consumed with milk. |
| 56. | <i>Glycosmis mauritiana</i> (Lamk.) Tanaka.                    | Sirumullipatchilai.        | Rutaceae.      | Leaves and flowers are consumed with ghee.       |
| 57. | <i>Ixora nigricans</i> R.Br. ex. Wight & Arn.                  | Aathusiruvengaipatchilai   | Rubiaceae      | Leaves and flowers is consumed.                  |
| 58. | <i>Tinospora cordifolia</i> (Willd.) Miers. ex Hook & Thomson. | Sangivee                   | Menispermaceae | The fruits are consumed.                         |

- |     |                                      |              |                 |  |
|-----|--------------------------------------|--------------|-----------------|--|
| 59. | <i>Trichosanthes cucumerina</i> L.   | Pudal        | Cucurbitaceae   | Fruit juice is eaten raw with hot water to cure gas troubles.      |
| 60. | <i>Anacardium occidentale</i> L.     | Kollankottai | Anacardiaceae   | Fruit juice is used.   |
| 61. | <i>Cassia auriculata</i> L.          | Aavaarai     | Caesalpiniaceae | Anthers juices are used as digestive property.                     |
| 62. | <i>Citrullus colocynthis</i> Schrad. | Kumitikaai   | Cucurbitaceae   | Fruit is laxative.   |
| 63. | <i>Citrus limon</i> (L.) Burm.f.     | Narangai     | Rutaceae        | Fruit juice is consumed.   |
| 64. | <i>Coriandrum satioum</i> L.         | Yellai       | Apiaceae        | Decoction of this seeds with palm jiggery provides good digestion. |
| 65. | <i>Datura metal</i> L.               | Ummatham     | Solanaceae      | Fruit is used as a laxative for cattle.                            |
| 66. | <i>Delonix elata</i> (L.) Gamble.    | Vathamadaki  | Caesalpiniaceae | The fresh leaves are eaten.  |
| 67. | <i>Gloriosa superba</i> L.           | Kanthal      | Liliaceae       | The tubers are boiled and consumed.                                |

### Swelling

- |     |                              |            |           |   |
|-----|------------------------------|------------|-----------|---|
| 68. | <i>Morinda pubescens</i> Sm. | Manjanathi | Rubiaceae | Leaves are boiled and bound on the affected part for relief from swelling and inflammation. |
|-----|------------------------------|------------|-----------|---|

### Toothache

- |     |                             |           |          |                                  |
|-----|-----------------------------|-----------|----------|----------------------------------|
| 69. | <i>Ficus bengalensis</i> L. | Allamaram | Moraceae | Prop root is used as toothbrush. |
|-----|-----------------------------|-----------|----------|----------------------------------|

70. *Ficus racemosa* L. Kallathimaram                      *Moraceae*                      *Seeds are used  
as purgative.*

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