INNSPUB

International Journal of Biosciences | IJB |
ISSN: 2220-6655 (Print), 2222-5234 (Online)
http://www.innspub.net
Vol. 23, No. 1, p. 18-32, 2023

RESEARCH PAPER OPEN ACCESS

Trading of medicinal plant products in Kovilpatti Taluk, Thoothukudi, South East Tamil Nadu, India

A. Antony Selvi[1], S. Prakash Shoba[2], P. Thenmozhil[3]

[1]*Department of Botany, G. Venkataswamy Naidu College (Autonomous), Kovilpatti, Tirunelveli, Tamil Nadu, India*

[2]*Department of Zoology, Holy Cross College (Autonomous), Nagercoil, TamilNadu, India*

[3]*Department of Botany, Justice Basheer Ahmed Sayeed College for Women, Chennai, TamilNadu, India*

Key words: Medical products, Kovilpatti taluk, MAPs, Useful parts, Non-herbal products

http://dx.doi.org/10.12692/ijb/23.1.18-32 Article published on July 07, 2023

Abstract

Pharmaceuticals, herbal remedies, teas, spirits, cosmetics, sweets, dietary supplements, varnishes, and insecticides are just a few of the processed and packaged goods made from medicinal and aromatic plants (MAPs), which are also created in large quantities. In many instances, using basic materials from plants are considerably less expensive than using substitute chemical substances. Around the globe, 70,000 plant species are thought to be used in folk medicine. Objectives: The purpose of this investigation was to: document the most traded species of medicinal plants in the Kovilpatti Taluk, Thoothukudi District, Tamil Nadu, including parts used, Description of medicinal plant products, sourcing regions, harvesting frequencies; Materials and Methods: to profile and investigate the rationales for the involvement of stakeholders in medicinal plants related-activities; to understand socio-economic attributes of stakeholders who were traders, collectors. to assess constraints and opportunities for sustainable management of medicinal plants in the Thoothukudi District. The present also highlights the available medicinal plant products utilized for religious and rituals purpose in the herbal medicinal shop. The present study highlights the available medicinal plant products, quantity sold and the price of the medicinal plant products in the above retailer shops. Results: To study the socio-economicprofiles of those involved in the trade, factors influencing prices of products and the impact of commercial harvesting on selected species. To record the available medicinal plant products utilized for religious and rituals purpose in the herbal medicinal shop. To find out ways and meansto preserve and conserve these plant diversity treasures.

* **Corresponding Author:** A. Antony Selvi ✉ selvi2438@gmail.com

Introduction

Because forests offer fresh water, oxygen, and a range of beneficial forest products for both medicine and food, people who live in lowland and mountainous locations have profited significantly from them (Kala, 2004). The values that have historically been connected to various types of forests and the products they provide, such as medicinal herbs, have taken on a substantial significance in the twenty-first century (Stein, 2004; Kala, 2004). Additionally, more natural components, such as extracts from different medicinal plants, are being included in cosmetic goods (Kit, 2003). China and India, the two largest countries in Asia, contain one of the most varied selections of certified and generally well-known medicinal plants (Raven, 1998). Since the Indian subcontinent is well known for the wide range of forest products it produces and its long-standing medical traditions, it is urgent to uphold these traditional values in national and international contexts while also realising the ongoing trends in traditional knowledge development. Developing this sector could benefit persons in low-income areas who largely depend on medicinal plants as an additional source of income by raising living standards (Myers, 1991; Lacuna-Richman, 2002).

The continued expansion of acknowledgment of medicinal plants is attributed to a variety of factors, including an increase in the use of herbal remedies. Allopathic medicine may be used to treat a wide range of illnesses. However, many individuals are reverting to because to its high price and negative consequences. Herbal treatments with fewer negative effects (Kala, 2005). Unfortunately, due to overharvesting and the fast rising demand for plant-based medicines, the populations of some selected high-value medicinal plant species in the wild are severely under threat. Due to their slow growth rates, low population densities, and constrained geographic ranges, several of these medicinal plant species are particularly vulnerable to extinction (Kala, 1998; Nautiyal *et al.*, 2002, Jablonski, 2004). However, since the discovery of the therapeutic uses of specific plant species, passed down from one generation to the next. On the other hand, because information about using plant organisms for good purposes has been passed down orally from one generation to the next, Due to the lack of awareness by younger generations as a result of a shift in perspective and ongoing socioeconomic changes, this information about useful plants has started to fade and become obsolete (Kala, 2002 and Kala, 2000).

In addition, indigenous knowledge on the usage of lesser-known medicinal herbs is rapidly dwindling (Kala, 2005). The realisation that traditional knowledge of many beneficial plants for medicine had been steadily fading in the past despite fresh interest at the moment made the necessity to examine the valuable information with the intention of growing the medicinal plants sector clear. Traditional healers faced an acute issue with the legal acquisition of wildlife products needed for traditional treatment. Conservationists and traditional healers observed high amounts of harvesting outside of protected areas (Botha, 1998).

Medicinal plants wealth in India

Of the 17,000 different higher plant species found in India, 7,500 are utilised medicinally (Shiva, 1996). Based on the indigenous flora, this percentage of medicinal plants is the highest percentage of plants used for medical reasons in any country on the planet. Following Ayurveda and Siddha as the two oldest medical systems in the Indian subcontinent, Unani and Siddha have independently identified about 2000 different species of medicinal plants. The production of 340 herbal medications and their conventional uses are described in the Charka Samhita, an old literature on herbal medicine (Prajapati, 2003). Approximately 25% of medications in the modern pharmacopoeia are currently derived from plants, and many others are synthetic counterparts made from prototype chemicals identified from plant species (Rao *et al.*, 2004).

Demand for medicinal plants

Given that human societies in developing countries rely heavily on forest products for their economy and

way of life, the ongoing growth in the human population is one of the factors raising concerns about our ability to meet our daily needs for food and medication. According to Samal *et al.* (2004), this phenomenon is causing the forest and the forest products to continuously erode, making it difficult to satisfy demand and preserve valuable bio resources. The Materia Medica is steadily expanding to include more and more species, but the requirements for their purity and accurate identification are not keeping up (Kaul, 1997). Only a small portion of the market's functioning, not on the whole, is revealed by the rates for medicinal plants and their derivatives on the open market.

The continued expansion in the number of people is one of the issues causing worry about our ability to meet our daily demands for food and medication because human cultures in emerging countries rely significantly on forest products for the economy and way of life. Samal *et al.* (2004) claim that this phenomena is causing the natural environment and its products to steadily deteriorate, making it challenging to meet demand and protect priceless bio resources. The number of species in the Materia Medica is continuously increasing, but the standards for their purity and exact determination are not keeping up (Kaul, 1997). The prices for medicinal herbs and derivatives of them only partially, not entirely, show how the market functions.

Collection of medicinal plants

The majority of dried herbs used in medical and aromatic plant trade internationally. The majority of the time, both wild and developed kinds is traded in their "crude" or "unprocessed" forms. Plant sales are increasing on a global scale. More than 95% of the 400 plant species utilised to create medication by various enterprises come from India's wild populations (Udiyal *et al.*, 2000). Due to continued use of several wild medicinal plant species and severe habitat loss over the past 15 years, a number of high-value medicinal plant species have experienced population decreases over time (Kala, 2003). The biggest threats to medicinal plants are those that have an effect on any kind of biodiversity that is used by humans (Rao *et al.*, 2004; Sundriyal, 1995).

The decline of customary laws that have regulated the use of natural resources is one reason putting medicinal plant species in jeopardy (Chimire *et al.*, 2005; Kala, 2005).These ancient rules have been demonstrated that they are easily undermined by modern socioeconomic factors (Kit, 2003). Because it is believed that wild plant kinds have higher chemical contents, manufacturers typically prefer them over domesticated therapeutic plants. The seasons in which a species is harvested and the various stages of a species' growth also have an impact on the variety in chemical composition. The industry for medicinal plants is unreliable because of the vast clandestine commerce. The financial benefits and administrative costs for wild populations are frequently underestimated (Kit, 2003; Kala, 2004). Research conducted locally frequently provide vital data that support research conducted nationally or regionally. The current study aims to quantify the trade in medicinal plant goods in Tamil Nadu, Thoothukudi District, India, and to investigate socioeconomic factors that may have an impact on resource management.

Materials and methods

Study area

Kovilpatti old name thirumangainagar by bala kilavipatt. It is 1 taluk in tuticorin district. 38 village panchayath in kovilpatti union. Kovilpatti is a Town in Kovilpatti Block in Tuticorin District of Tamil Nadu State, India. It is located 58Km towards North from District headquarters Thoothukudi.

This Place is in the border of the Tuticorin District and Virudhunagar District. Virudhunagar District Sattur is north towards this place. The Thoothukudi District is located on south east of Tamil Nadu state. The District covers an area of 4,621sq.km and is bounded by tirunelveli District to the north, the Districts of Virudhu Nagar and Ramanathapuram, on the East and by Gulf Mannar on the South-East and by Tirunelveli.

Methodology

Specifically focusing on plants from District Thoothukudi, a market analysis of collection and trade patterns for medicinal plant products was carried out between December 2021 and May 2022. The survey was aimed at a number of important groups that were identified. The three main groups that participate in the sale of medicinal plants are herbal shop traders, agents, and gatherers. Since they are the primary harvesters of the resource, plant gatherers were extensively questioned about the origin and availability of natural plants. In-person interviews with store owners took place there. A significant amount of Indian medicinal plant material was used to identify the collected plant species. The following five Siddha medicine retail establishments were chosen for this research (Fig. 5, 6).

1. Sri Abirami Nattu Marunthu Kadai - 216/5, Salaiputhur, Allampatti, K.RNagar post. (KVP-1)
2. Lakshmi Nattu Marunthu Kadai (KVP-2) - 43-A, Bharadhidasan Street, Kovilpatti.
3. Sri Lakshmi Herbals (KVP-3) - 41, Bharadhidhasan Street, Kovilpatti.
4. V.S. Pillai & Sons Nattu Maruthu Kadai (KVP-4) - Bharadhidasan Street, Kovilpatti.
5. Arumugam pillai Nattu Marunthu Kadai (KVP-5) - 73, Matha kovil Street, Professional courier (opp.), Kovilpatti.

Presentation of data

Systematic enumeration of the plant products is arranged alphabetically. The families, vernacular names, use of the plants etc. are mentioned (Fig. 1).

Results and discussion

The study, which focused on the Tamil Nadu district of Thoothukudi and the Kovilpatti Taluk, was conducted over a three-year span from December 2021 to may 2022. The information was gathered during field trips based on interviews with Nattu Marunthu Kadai owners and highly educated medicine men whose knowledge was only valued and recognized by the general public (Fig. 7, 8).

Table 1. List of medicinal plants products used for rituals in the study area.

S. No.	Botanical name	Tamil name	Useful part
1.	*Areca catechu* L.	Kottai pakku	Nut
2.	*Andrographis paniculata* (Burm. f.) Wall.ex Nees.	Nila vempu	Whole plant
3.	*Acorus calamus* L.	Vashampu	Rhizome
4.	*Aristolochia indica* L.	Karuda kodi	Stem
5.	*Achyranthes aspera* L.	Nayuruvi	Fruit
6.	*Alkanna tinctoria* (L.) Tausch.	Vembalam pattai	Root
7.	*Anacyclus pyrethrum* DC.	Akkara	Bark
8.	*Acalypha indica* L.	Kuppaimeni	Leaves
9.	*Abrus precatorius* L.	Sivappu kundu muthu	Seed
10.	*Abrus fruticulosus* (Wall.) Wight & Arn.	Vellai kundu muthu	Seed
11.	*Asparagus racemosus* Willd.	Thaneer vittan kizhangu	Tuber
12.	*Allium cepa* L.	Vengayaayam	Bulb
13.	*Acacia Arabica* (Lam.) Wild.	Karuvelam	Resin
14.	*Acacia sinuate* (Lour.) Merr.	Sikaikkai	Pod
15.	*Albizia amara* (Roxb.) Boivin.	Arabbu	Bark
16.	*Azadirachta indica* A. Juss.	Vempu	Leaves and Resin
17.	*Anamirta cocculus* (L.) Wt & Arn.	Kaakaa kolli	Seeds
18.	*Aegle marmelos* (L.) Correa.	Vilvam	Leaves and Fruit
19.	*Alpinia galangal* (L.) SW.	Perarattai	Rhizome

20.	*Alpinia calcarata* Roscoe.	Chitharathai	Rhizome
21.	*Aquilaria agallocha* Roxb.	Akil kattai	Bark
22.	*Anethum grabveolens* L.	Satakuppai	Fruit
23.	*Bixa orellana* L.	Sabja vithai	Seed
24.	*Cuminum cyminum* L.	Shiragam	Seed
25.	*Coriandrum sativum* L.	Kothamalli	Seed
26.	*Curculigo orchioides* Gaertner.	Nilapanai kilangu	Rhizome
27.	*Canarium strictum* Roxb.	Karun Gunkiliyam	Resin
28.	*Cucumis sativus* L.	Vellari	Seed & Fruit
29.	*Cucurbita pepo* L.	Nila poosani	Tuber
30.	*Corallocarpus epigaeus Benth. Ex Hook. F.*	Aagaya karuda kilangu	Root
31.	*Crataeva magna (Lour.) DC.*	Mavilangam	Bark
32.	*Cleome viscose L.*	Naai kadugu vithai	Seed
33.	*Cyperus rotundus L.*	Korai kizhangu	Rhizome
34.	*Celastrus paniculatus Wild.*	Valulavai	Fruit
35.	*Caesalpinia crista L.*	Kalarchikai	Seed
36.	*Cassia auriculata L.*	Avaram	Whole plant
37.	*Cycas circinalis L.*	Mathana kama poo	Flower
38.	*Costus speciosus (J. Koenig) Sm.*	Koshtam	Stem
39.	*Crocus sativus L.*	Kungumapu	Flower
40.	*Cinnamomum camphora (L.) Pres.*	Pachai karpuram	Leaves
41.	*Cinnamomum cassia (L.) J. Presl.*	Surulpattai	Bark
42.	*Cedrus deodara (Roxb.) G. Don.*	Devadharu	Stem
43.	*Cardiospermum halicacabum L.*	Mudakkathan	Leaves
44.	*Curcuma longa L.*	Manjal	Rhizome
45.	*Cinnamomum zeylancium BL.*	Lavanga pattai	Flower
46.	*Coleus vettiveroides KC Jacob.*	Vilamichai	Root
47.	*Cenchrus americanus (L.) Morrone.*	Kambu	Seed
48.	*Curcuma aromatic Salisb.*	Jadamanjal	Shrub
49.	*Clerodendrum serratum L.*	Chiru Tekku	Root
50.	*Decalepis hamiltonii Wight & Arn.*	Magali kizhangu	Root
51.	*Euphorbia hirta L.*	Amman pachcharisi	Leaves
52.	*Enicostemma axillare (Lam.) Raynal.*	Vellarugu	Flower
53.	*Embelia ribes Burm. F.*	Vayuvilamgam	Fruit
54.	*Elaeucarpus angustifolius Blume.*	Rudraksha	Fruit
55.	*Elattaria cardamoum (L.) Maton.*	Elakkai	Seed
56.	*Ferula assafoetida L.*	Perungayam	Resin
57.	*Glymnema sylvestre R.Br.*	Sirukurinjan	Leaves
58.	*Garcinia gummi-gutta (L.) N. Robson.*	Parpata puli	Fruit
59.	*Glycyrrhiza glabra L.*	Athimadhuram	Root
60.	*Hemidesmus indicus (L.) R.Br.*	Nannari	Root
61.	*Hygrophila auriculata (Schumach) Heine.*	Neermuli vithai	Seed
62.	*Helicteres isora L.*	Valampurikkai &Idampurikkai	Fruit

63.	*Hordeum vulgare L.*	Barley	Seed
64.	*Hedychium spicatum Sm.*	Poolankilangu	Rhizome
65.	*Hydnocarpus laurifolia (Dennst) sleumer.*	Neeradimuthu	Seed
66.	*Hibiscus rosa-sinesis L.*	Sembaruthi	Flower
67.	*Justicia adhatoda L.*	Adhatoda	Leaves
68.	*Lepidium sativum L.*	Aazhi vithai	Seed
69.	*Lawsonia inermis L.*	Maruthani	Leaves and Seed
70.	*Maerua oblongifolia (Forssk.) A. Richard.*	Bhumisakkarai kilangu	Root
71.	*Mesua ferrea L.*	Sirunagappu	Flower
72.	*Mucuna pruriens (L.) DC.*	Poonaikkali	Seed
73.	*Macrotyloma uniflorum (Lam.) Verdc.*	Kollu	Seed
74.	*Melia azedarach L.*	Malai vempu	Leaves
75.	*Michelia champaca L.*	Senbaga poo	Flower
76.	*Moringa pterygosperma Gaertn.*	Murungai	Seed, Flower and Resin
77.	*Myristica fragrans Houtt.*	Jathikkai	Fruit
78.	*Mimusops elengi L.*	Mahilam poo	Flower
79.	*Nelumbo nucifera Gaertner.*	Tamarai	Seed
80.	*Nigella sativa L.*	Karunjiragam	Seed
81.	*Nardostachys jadamansi DC.*	Sadamanchi	Root, Seed
82.	*Operculina turpethum (L.) Silva Manso.*	Sivathai	Seed
83.	*Ocimum basilicum L.*	Karupuratulasi	Leaves
84.	*Ocimum sanctum L.*	Thulasi	Leaves
85.	*Phyllanthus officinalis L.*	Nelli	Fruit
86.	*Psoralea corylifolia L.*	Karpogarusi	Seed
87.	*Pimenta acris Kostel Allg.*	Vellai milagu	Seed
88.	*Piper longum L.*	Tipili	Seed
89.	*Piper nigrum L.*	Milagu	Seed
90.	*Pipper officinarum DC.*	Sevvyam	Fruit
91.	*Piper cubeba L.*	Valmilagu	Fruit
92.	*Papaver somniferum L.*	Kasakasa	Seed
93.	*Phyllanthus niruri L.*	Keelanelli	Wholeplant
94.	*Pedalium murex L.*	Perunerunji	Fruit
95.	*Punica granatum L.*	Madulai	Fruit
96.	*Picrorhiza kurroa Royle ex Benth.*	Kadugurokini	Seed
97.	*Prunus dulcis (Miller.) D.A Webb.*	Badham	Resin
98.	*Piper retrofractum Vahl.*	Yanai Thippli	Fruit
99.	*Quercus infectoria Oliver.*	Maasikkai	Fruit
100.	*Rauvolfia serpentina L.*	Sarpagandha	Root
101.	*Raphanus sativus L.*	Mullangi	Seed
102.	*Rosa damascena Mill.*	Irosa	Flowers
103.	*Spinacia oleraceae L.*	Keerai	Seeds
104.	*Semecarpus anacardium L.*	Seran kottai	Fruit
105.	*Sinapis alba L.*	Ven katugu	Seed

106.	*Shorea robusta Gaertn.f.*	Gungiliyam	Resin
107.	*Strychonos potatorum L.F.*	Thettran kottai	Seed
108.	*Strophanthus nux-vomica L.*	Etti	Seeds
109.	*Solvia Hispania L.*	Chiya vithai	Seed
110.	*Syzygium aromaticum (L.) Merr. & Perry.*	Kirambu	Bud, Leaves
111.	*Syzygium cuminii L.*	Naval	Bark, Fruit
112.	*Sesamum indicum L.*	Ellu	Seed
113.	*Spermacoce hispida L.*	Nathai suri	Seed
114.	*Solanum surattense Burm. f.*	Kandankathiri	Fruit
115.	*Solanum erianthum D.Don*	Sundaikkai	Fruit
116.	*Sapindus laurifolius Vahl.*	Poonthikottai	Fruit
117.	*Santalum album L.*	Sandanam	Stem
118.	*Styrax benzoin Dryand.*	Sambirani	Resin
119.	*Senna auriculata (L.) Roxb.*	Ponnavarai	Seed
120.	*Smilax china L.*	Parangipattai	Bark
121.	*Triannthema decandra L.*	Saranam	Root
122.	*Terminalia chebula Retz.*	Kadukkai	Fruit, Seed, Flower
123.	*Terminalia bellerica (Gaertn) Roxb.*	Dhantrikkai	Seed
124.	*Tinospora cordifolia (Willd.) H K. F.& Th.*	Shinthil	Stem
125.	*Triticum aestivum L,*	Sampa gothumai	Seeds
126.	*Tribulus terrestris L.*	Nerunji	Fruit
127.	*Tamarindus indica L.*	Puli	Fruit
128.	*Trigonella foenum- graecum L.*	Vendayam	Seed
129.	*Thespesia populnea (L.) Soland. ex. Correa*	Poovarasu	Bark
130.	*Vernonia anthelmintica (L.) Wild.*	Kattu shiragam	Seed
131.	*Vateria indica L.*	Vellai kungiliyam	Resin
132.	*Vitex negundo L.*	Nochchi	Leaves
133.	*Vetiveria zizanioides (L.) Nash.*	Vetti ver	Root
134.	*Ventilago maderaspatana Gaertn.*	Vempadam pattai	Root
135.	*Wrightia tinctoria (Roxb.) R. Br., Mem.*	Vetpalai	Seed
136.	*Withania coagulans (Stocks) Dunal.*	Panner poo	Flowers
137.	*Withania somnifera (L.) Dunal.*	Amukkira	Rhizome

Current status of medicinal plant product trade

A total of 137 species of medicinal plants were traded for business reasons in the study region, according to the study. Most of the kinds were distributed through intermediaries to wholesalers. There are 122 groups in it, which are divided into 72 families. There are 116 dicots, 19 monocots, and 2 gymnosperms among them. 33 herbs, 43 trees, 23 shrubs, 1 liana, and 16 climbers are found in the 116 dicots. 19 monocots, including 1 tree, 18 plants, and (Fig. 2). There are 122 Families in the 72 Angiospermic families that are only represented by one Genus. Additionally, two types of gymnosperms were identified.

Plant parts traded

One of the 137 plant species that are traded has roots that are completely dug up from the earth and the vegetative parts are discarded, while the other 137 have bulbs, tubers, and roots. 8 is made up of timber species whose discarded bark causes death when ring-barked. Three of the abandoned plant materials for medicinal purposes included whole plants, while the

remaining 41 contained seeds, 13 contained leaves, and 10 contained flower species. Only 41 plants are from cultivated sources, while 59 plants are taken from the woods.

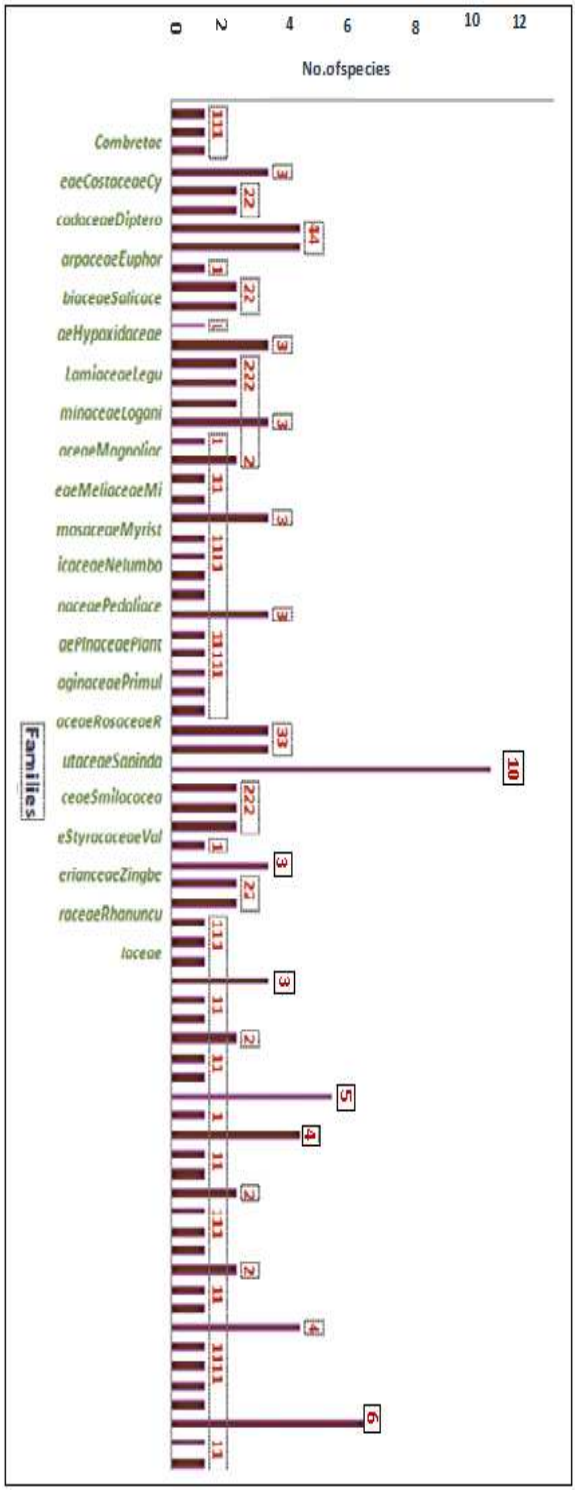

Fig. 1. Histogram showing families with maximum number of medicinal plant products.

Only 13 species of the 59 cultivated plants in this study region were grown, with the remaining plant products being bought in nearby large markets like Madurai, Kerala. In this Kovilpatti Taluk,

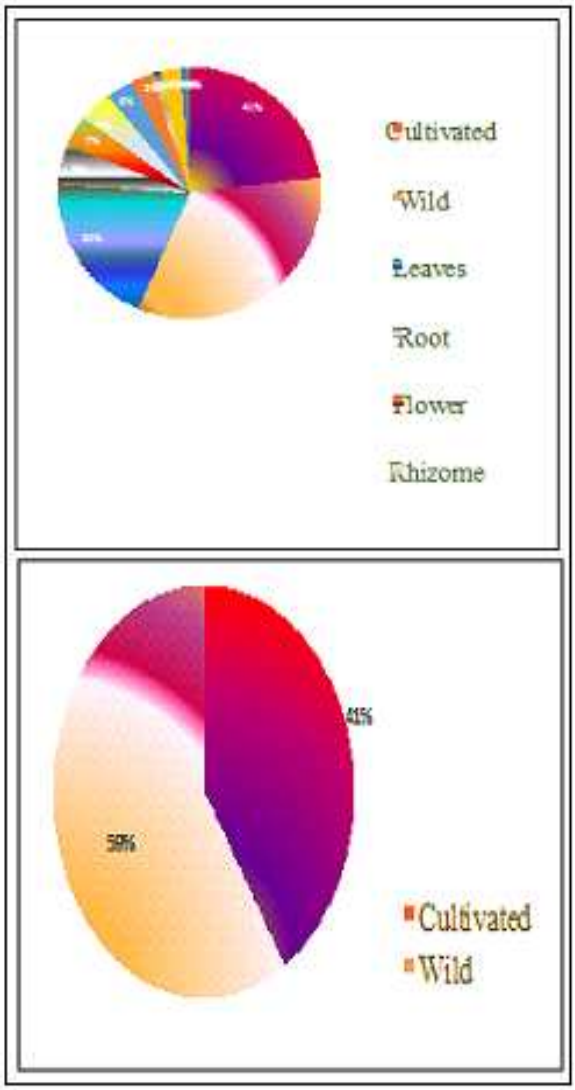

Fig. 2. Over view of the plant part in trade.

Thoothukudi District, no efforts were made to cultivate these medicinal plants; the majority have only been acquired from wild sources. Nine of the exchanged medicinal plant components included stem, rhizome, 22 fruits, 7 resin, and bark. 76% of the total material provided in the market was in the form of aerial parts, which include leaves, stems, flowers, and fruits. The 24% of species where roots, bark, and leaves have all been taken is concerning (Fig. 3).

The collected medicinal plants were used in traditional healthcare for a variety of disease conditions such as malaria, typhoid, jaundice, skin irritations, dysentery, anaemia, cough, measles, hypertension and fever.

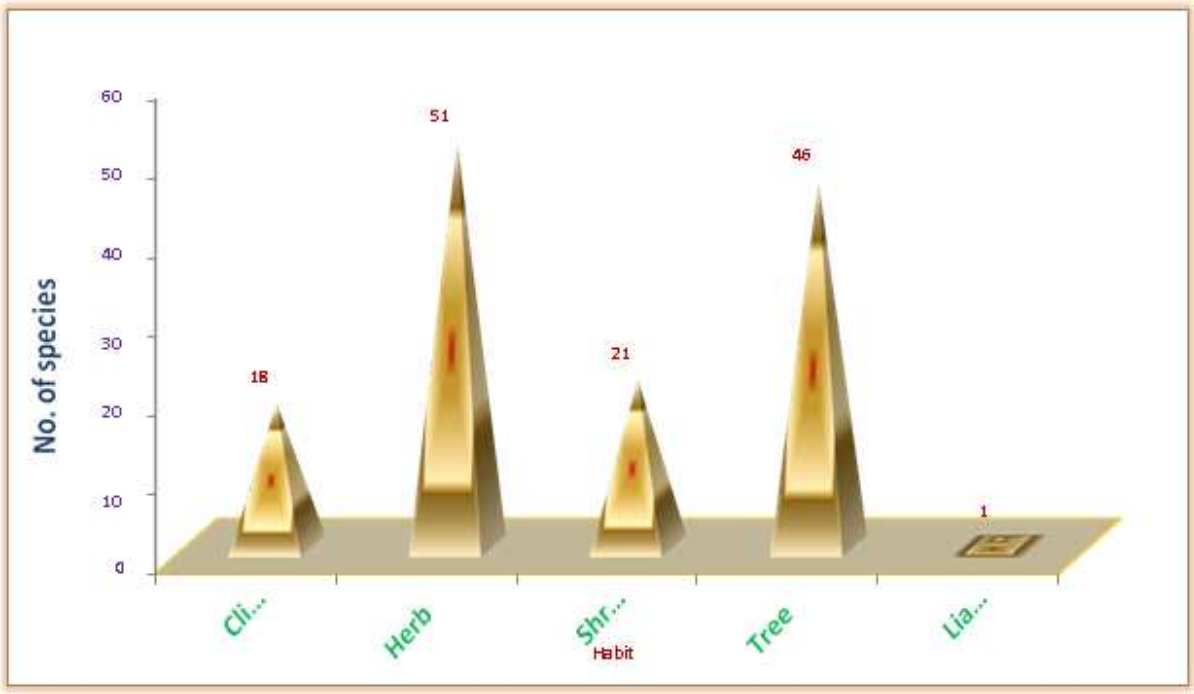

Fig. 3. Habit distribution of Angiosperm medicinal plants in study area.

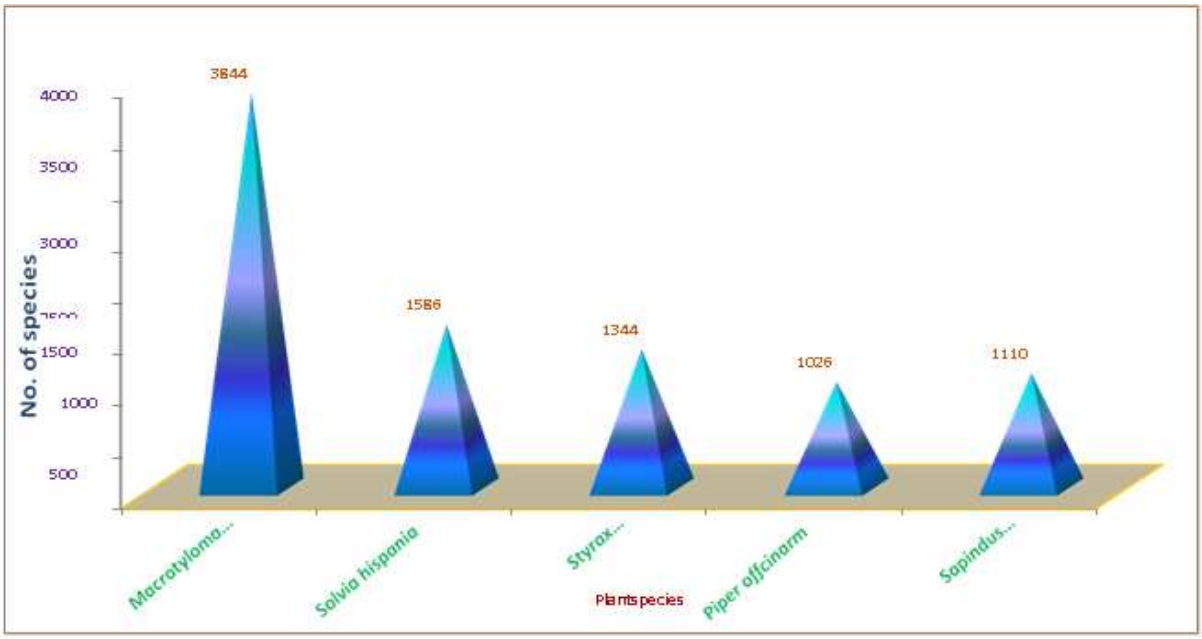

Fig. 4. Monthly turnover ten most traded plant products in the selected herbal shops.

The drugs like *Crocus sativus, Cycas circinalis, Ferula asafoetida, Eletteria cardamomum, Syzygium aromaticum, Buchanania lanzan, Abrus fruticulosus* and *Cinnamomum camphora* are more costly than other products.

Collection of medicinal plant

Animal herders used to collect the plant's parts for their own use when they visited the grazing grounds. Later, they started collecting these plants for local contractors and traditional physicians. However, additional contractors were present as a result of rising demand and high profit margins. Women and children are also included in collection operations on a local level. The therapeutic plants were almost never farmed; instead, they were gathered from the woods. The strong gathering of the more than 70 plant species that are known to reside there poses a major

danger to the region's biodiversity. The at random and disorganised collection of plants for raw pharmaceuticals has resulted in a sharp decline in the population of medicinal plants in their natural habitat. There is a severe threat to the survival of medicinal plant populations by the gathering of bark, roots and tubers.

Fig. 5. Study Site (Map).

Quantities Traded

The rate of various medicinal plant products from the study area was ranging from Rs.10to Rs.100/kg. Represented in Table 1.

There are 20 plant products was sold in the average rate of Rs.20-100/Kg. such as *Phyllanthus niruvi* (Rs.34/Kg.), *Hygrophila auriculata* (Rs.90/Kg.), *Syzygium cumini* (Rs.45/Kg.), *Terminalia chebula* (Rs.10/Kg.), *Ventilago maderaspatana*(Rs.55/Kg.).

More than 30% (103) of the plant products like *Acalypha indica* (Rs.887/Kg.), *Cardiospermum haliacacabum* (Rs.863/Kg.), *Cinnamomum camphora* (Rs.902/Kg.), *Spinacia oleraceae* (Rs.807/Kg.) and *Spermaceae hispida* (Rs.700/Kg.) were ranged Rs.100-1000/Kg.).

Fig. 6. Herbal retailer shops in the Kovilpatti District, Tamil Nadu.

There are 14 plant products was sold in average rate of Rs.1000-4000/Kg. such as *Styrax bennzoin* (Rs.1344/Kg.), *Triticum aestivum* (Rs.1531/Kg.), *Melia azedarach* (Rs.1542/Kg.), *Solvia hispania* (Rs.1586/Kg.) and *Macretycoma uniflorum* (Rs.3844/Kg.). Average price of some most traded medicinal plant species (Fig. 4).

Middle men traders/ retailers and their functioning

The supply chain for the trade in plants for medicinal purposes is difficult to follow. Traders are an essential link between the market and therapeutic plants.

They receive market data on species and pricing as well as funding from important wholesalers from Madurai, serving as the first key point of contact for local collectors. Many businesspeople also own stores and farms. In addition, a lot of astute Keralan consumers or business owners frequently come the area in search of supplies that can be found nearby.

Non-herbal products-Minerals

Salt is referred to be a vital component in medicine in some of the oldest medical manuscripts (Cirillo *et al.*, 1994). The 18 Siddhars of the Siddha tradition have classified 4,448 diseases and recommended cures utilising herbs, roots, salts, metals, and mineral compound.

The Siddhars were pioneers in the development of metals, minerals, and medicinal plants on a global scale. Siddhars treat kapla with more than simply uncommon plants.

In addition, certain metals and gemstones are used. It is believed that rare solitary kapla plants can combine substances like mercury, sulphur, arsenic, and others to make them fire resistant.

P.No	Botanical Name	Tamil Name
a.	*Clerodendrum serratum* L.	Chiru Tekku
b.	*Glyayrrhiza glabra* L.	Athimadhuram
c.	*Acacia sinuate* (Lour.)Merr.	Sikakkai
d.	*Cedrus deodara* (Roxb.)G.Don	Devadharu
e.	*Solanum surattense* Burm.f.	Kandankathiri
f.	*Cassia auriculata* L.	Avaram
g.	*Vetiveria zizanioides* (L.)Nash	Vetti ver
h.	*Aristolochia indica* L.	Karuda kodi
i.	*Asparagus racemosus* Willd.	Thaneer vittan kizhangu
j.	*Asparagus racemosus* Wiid.	Parankipattai
k.	*Acorus calamus* L.	Vashampu
l.	*Pipper officinarum*	Milagu kodi
m.	*Thespesia populnea* (L.) Soland. Ex Correa.	Povarasan
n.	*Aquilaria agallocha* Roxb.	Akilam
o.	*Hedychium spicatum* Sm.	Poolankilangu
p.	*Terminalia chebula* Retz.	Kadukkai poo

Fig. 7. Medicinal plant products.

The main ingredients of siddha kapla remedies made from minerals include gold, mercury, sulphur, and salts. Anti-syphilitic mercurial compounds are extremely successful.

Mercurial chemicals work well as bacterostatic, anti-syphilitic, nervine, tonic, and stimulant substitutes. 20 distinct salt and mineral products were found in the Siddha medicine stores at the time.

P.No	Botanical Name	Tamil Name
a)	*Vateria indica* L.	Vellai kungiliyam
b)	*Canarium strictum* Roxb.	Karun kungiliyam
c)	*Vernonia anthelmintica* (L.) Wild.	Kattu shiragam
d)	*Pigmenta acris* Kostel Allg.	Yelakkai vithai
e)	*Cinnamomum cassia* (L.)J.Presl	Surulpattai
f)	*Hydnocarpus laurifolia* (Dennst) sleumer.	Neeradimuthu
g)	*Decalepis hamiltonii* Wight & Arn	Magali kizhangu
h)	*Terminalia chebula* Retz.	Kadukkai
i)	*Mesua ferrea* L.	Sirunagappu
j)	*Hygrophila auriculata* (Schumach) Heine	Neermuli vithai
k)	*Withania tinctoria* (Roxb.)R.Br	Vetpalai
l)	*Celastrus paniculatus* Willd.	Valulavai
m)	*Picrorhiza kurroa* Royle ex Benth.	Kadugurokini
n)	*Spermacoce hispida* L.	Nathai suri
o)	*Querens infectoria Oliver.*	Maasikkai
P)	*Cassia occidentalis* L.	Poonavarai vithai

Fig. 8. Medicinal plant products.

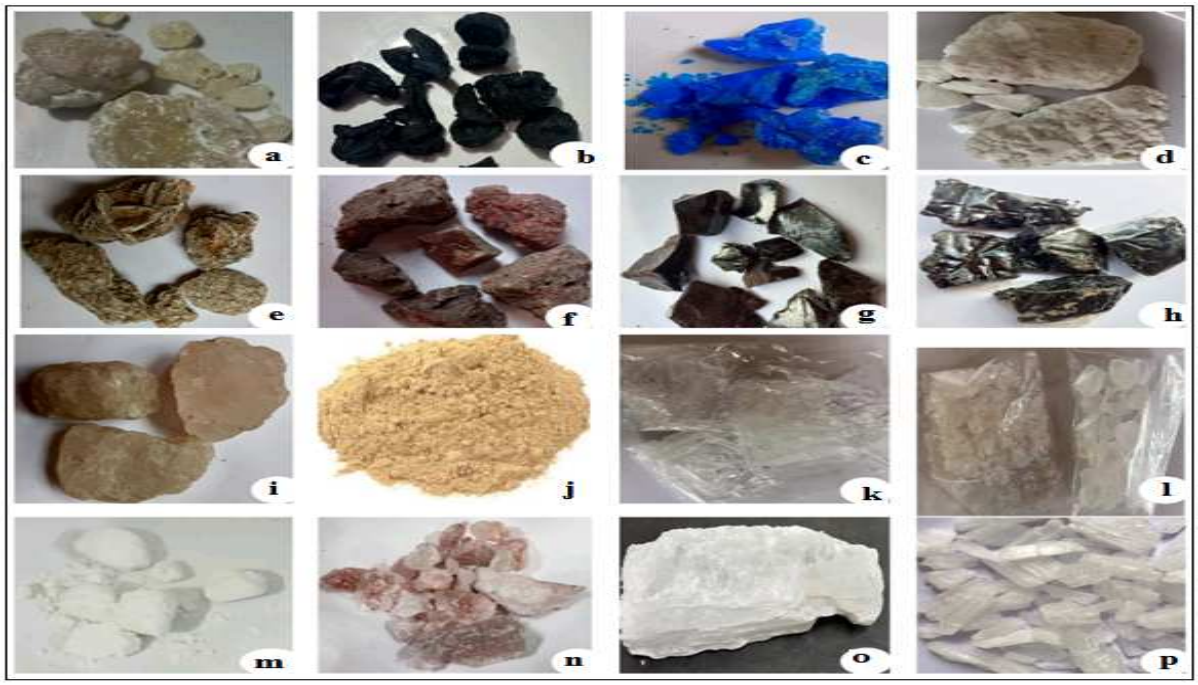

Fig. 9. Salt and Mineral Products.

In Siddha treatment, uppu are frequently used in the preparation of senthuram and palpam. Typically, these goods are sold as crystals on the market (Fig. 9, 10). These goods have an appearance of glass and are hard and asymmetrical in form.

S. No.	Name of the salt
a.	Vellai kungiliyam
b.	Parpada puli
c.	Thutham thurisu
d.	Valaiyal uppu
e.	Kallnar parpa
f.	Kari Uppu
g.	Kasikkati
h.	Kariya valam
i.	Indhuppu
j.	Multhanimatti
k.	Oma uppu
l.	Puthina uppu
m.	Indhuppu
n.	Silasathu parpam
o.	Vengara Uppu

Fig. 10.

Summary and Conclusion

Medicinal plants are a valuable resource for many people's incomes in developing nations.This is true in India, where a great deal of the rural and urban populations depends on medicinal plants to meet both their basic health needs and to produce money. The majority of the times, medicinal plant populations in the wild are not negatively impacted by harvesting for household use. The wild groups of medicinal plants are at risk of an unprecedented extinction danger due to the switch from subsistence to commercial harvesting.

References

Anonymous. 1996. Sectoral Study an Indian Medicinal Plants-status, perspective and strategy for growth. Biotech Consortium India Ltd., New Delhi.

Bevill, Bhattarai, 1997. He and Ning, 1997; Lange, 1998 ; 2002 ; Robbins, 1999 ; Kathe 2003.

Botha J. 1998. Developing an understanding of problems being experienced by traditional healers living on the western border of the Kruger Natoinal Park : foundations for an integrated conservation and development programme. Development Southern Africa **15,** 621-634.

Chimire M, Capasso G, Di Leo VA, De Santo NG. 1994. A history of salt. American Journal of Nephrology **14**, 426-31.

FAQ. 2003. State of the world's forest. Rome : Food and Agricultural Organization.

Jablonski Joshi K, Chavan P, Warude D, Patwardhan B. 2004. Molecular marks in herbal drug technology. Current Science. **87,** 159-165.

Joshi K, Chavan P, Warude D, Patwardhan B. 2004. Molecular marks in herbal drug technology. Current Science **87,** 159-165.

Kala 2005. Current status of medicinal plants used by traditional vaidyas in Utaranchal state of India. Ethnobotany Research and Application **3,** 267-278.

Kala CP. 2004. Revitalizing traditional herbal therapy by exploiting medicinal plants : Acase study of Uttaranchal state in India in indigenous knowledgr : Transforming the academy, proceedings of an international conference. Pennsylvania : Pennsylvania State University. 15-21.

Kala CP. 2000. Status and conversation of rare and endangered medicinal plants in the Indian trans-Himalays. Biological Conversation **93,** 371-379.

Kala CP. 2002. Medicinal plants of Indian trans-Himalaya. Dehradun. Bishen Singh Mahindra Pal Singh.

Kamboj VP. 2000. Herbal Medicine. Current science **78(1),** 35-39.

Kaul MK. 1997. Medicinal plants of Kashmir and Ladakh. New Delhi: Indus publishing Company, New Delhi.

Kit. 2003. Cultivating the healthy enterprise in Bulletin 350. Royal Tropical Institute. Amstardam, Netherland.

Nautiyal S, Roa KS, Maikhuri RK, Negi KS. Kala CP. 2002. Status of medicinal plants on way to Vashuki Tal in Mandakini Valley, Garhwal, Uttaranchal. J. Non-timber forest products **9,** 124-131.

Rao MR, Palada MC, Becker BN. 2004. Medicinal and aromatic plants in Agro. Agro-Forestry Systems **61,** 107-122.

Satakopan S. 1994. Pharmacopeial Standards for Ayurvedic, Siddha and Unani Drugs. In Proceedings of WHO Seminar on medicinal plants and quality Control of Drug Used in ISM. Ghaziabad. p, 43.

Sharma AB. 2004. Global medicinal plants demand may touch s Trillian by 2050. Indian Express.

Shiva MP. 1996. Inventory of forestry resources for sustainable management and biodiversity conservation. Indus Publishing Company, New Delhi.

Stein R. 2004. Alternative remedies gaining popularity the Washington post.

Sundriyal RC, Sharma E. 1995. Cultivation of medicinal plants and orchids in Sikkim Himalaya. Almora. GB Plant institute of Himalayan Environment and Development.

Ticktin. 2004. The ecological implications of harvesting non-timber forest products.J.Applied Ecology **41,** 11-21.

Weekely Williams VL, Balkwill K, Wittkowski ETF. 2000. Unravelling the commercial market for medicinal plants and plant parts on the Witwatersrand. Economic Botany **54,** 310-327.