International Journal of Biology Research
ISSN: 2455-6548
Impact Factor: RJIF 5.22
www.biologyjournal.in
Volume 3; Issue 1; January 2018; Page No. 07-15

Ethnomedicinal plants utilized by Paliyar's tribe in Sadhuragiri hills, Southern Western Ghats, Tamil Nadu, India

***K Aadhan, SP Anand**
PG and Research Scholar, Department of Botany, National College (Autonomous), Tiruchirappalli, Tamil Nadu, India

Abstract
An ethnobotanical survey was conducted to document the ethnomedicinal plants which are used by the Paliyar tribal people in Sadhuragiri forest range (A part of southern Western Ghats) in Virudhunagar district of Tamil Nadu, India. The information on plants was collected by interviewing the Paliyar traditional practitioners. The present study revealed that the plants which are used in traditional systems are mostly collected from the wild resources. There were 150 species of medicinal plants belonging to 66 families were documented in the present study and are mostly used to cure skin diseases, Stomachache, wound, Cough, Asthma, Diarrhoea, Jaundice, Cold, Fever, Ulcer, Headache, Kidney problems, Diabetic, Leprosy, Leucoderma, Snake bite, Body pain, Liver disorders, Gonorrhoea, Nervous disorders, Rheumatism, Anemia, Malaria Sperms counts, Cancer, Eye diseases, Paralysis, Piles and Hernia. The collection and documentation of their empirical knowledge and traditional techniques based on the traditional use of plants is no doubts are markable step keeping in view the fading ethnic traditions and culture. More attempts should be made to authenticate and evaluate the efficacy of these herbs and products used by the Paliyar tribal communities.

Keywords: ethnomedicine, paliyar's tribes, Sadhuragiri hills, wild plants, southern western ghats, Tamil Nadu

1. Introduction
India, blessed with high biological diversity, is one of the12 mega diverse countries and lodges two of the eight hottest hotspots of global biodiversity. Major wilderness areas include the Western Ghats, Eastern Ghats, tropical dry evergreen forests of peninsular India and Eastern Himalayas (Parthasarathy *et al*., 2010; Suba *et al*., 2014; Sukumaran *et al*., 2014) [36, 53, 54]. India's natural forests are home to about 8000 medicinal plants that form the primary source of health care for 60-80% of the country's population, especially the rural people, tribal community and poor people. About 80% of traditional medicines used for principal healthcare are derived from plants. During the last few decades, there has been an increasing interest in the study of medicinal plants and their traditional use in different parts of the globe (Rossato *et al*., 1999; Al-Quran *et al*., 2005) [43, 3].

Indigenous knowledge through ethnomedicinal studies is significant for the management and utilization of biological resources. The World Health Organization (WHO) suggested that as many as 80% of the world's people depend on traditional medicine for their primary healthcare needs. There are significant economic benefits in the development of indigenous medicines and in the use of medicinal plants for the cure of various diseases (Azaizeh *et al*., 2003) [8].

The tribal communities live forests, hilly tracts and naturally isolated areas from the civilized urban society. That's why in nature they developed their cultures of their own. They depend up on the nature for their food, shelter, and livelihood, thus the vegetation has much influence on the tribal life. In this division the tribal people are present in almost all villages. In India 550 ethnic tribes possess rich traditional and indigenous knowledge. The tribal people are exploiting a variety of herbals for effective curing of various ailments (Alagesaboopathi, 2011) [1].

Therefore, documentation of traditional knowledge and ethnobotanical information play an important role in scientific research (Awadh *et al*., 2004) [5]. More number of researchers and institutions need to be seriously involved in medicinal plants research and development, not only for the intellectual challenges involved but also the huge possible profits obtainable over a period of time (Latif 1984; Osma, 1995; Rates, 2000) [24, 34].

Medicinal plants exhibit diverse life forms and occur under varied ecologies practically occupying all floristic regions of the world. A systematic database needs to be established for each country, mapping the Eco- geographic distribution of medicinal plant biodiversity. Geographic, ecological and taxonomic notes should be included. Presently, good database is available at the plant resources. (Chadha *et al*., 1995; Kumar *et al*., 2000; Prajapati *et al*., 2000) [11, 22, 39]. Habitat destruction is the major threat for the survival of medicinal plants. Proper documentation of indigenous and ethnobotanical knowledge in each country will help to establish the base line data and to plan for conservation programmes (Jain, 1991; Anon, 1994) [19, 4].

The main objective of this study was to assess the diversity of ethnomedicinal plant species used by Paliyar tribes in Sadhuragiri hills, Virudhunagar district and to document the traditional wild medical uses in healing aliments. Similar ethnobotanical studies have been reported in several parts of India to document the traditional knowledge that has been vanishing (Viswanathan *et al*., 2001; Rajan *et al*., 2002; Ganesan *et al*., 2004; Ayyanar *et al*., 2005; Sandhya *et al*., 2006; Ignacimuthu *et al*., 2006; Savithramma *et al*., 2007;

Pattanaik *et al*., 2008; Kosalge *et al*., 2009; Namsa *et al*., 2009; Upadhyay *et al*., 2010) [61, 13, 6, 44, 16, 47, 37, 21, 32, 58].

2. Materials and Methods

2.1 Study area

Sadhuragiri hills are situated in Southern Western Ghats comes under the Srivilliputhur Grizzled Squirrel Wildlife Sanctuary Srivilliputhur taluk, Virudhunagar district. The elevation of Sadhuragiri is 1200 meters (3,937.0 ft.) msl in Western Ghats of South India. It lies between 9º. 42´ - 9 º.44" West latitude and between 77 º.37 - 77 º. - 41" East longitude. Sadhuragiri is in an area with a Tropical Evergreen Forest, Semi Evergreen Forest and Mixed Deciduous Forest climate. The only tribal community residing in this region is Hindu Paliyar tribes (Fig: 1.a).

Fig 1(a): View of the study region

2.2 Methods

Several field trips were carried out in Sadhuragiri hills between Jan 2015 and March – 2016, Covering different seasons. In order to know the phenology of the plants an Intensive and extensive field surveys were made in Sadhuragiri hills and villages in Virudhunagar district. The data were collected through repeated field visits and the careful interaction with the village people and Paliyar tribes. The collected specimens were identified taxonomically with the help of available Monographs, taxonomic revisions and floras and by using field keys. (Gamble 1956; Henry *et al*., 1987; Matthew, 1983; Jain, S.K; Rao, R.R., 1977) [12, 15, 26, 17]. Ethenomedicine information was gathered from all categories of village people such as the local healers, village leaders, elderly persons and Paliyar tribes and the person having a through knowledge of Medical practices. Traditional Medicines for the Treatment of different diseases were cross checked and confirmed with some Siddha Doctors. The information gathered from one place was also confirmed with different communities of village people, Paliyar tribals in different places of investigation. The collected plant specimens were deposited in the Department of Botany, National College (Autonomous), Tiruchirappalli, Tamil Nadu for future reference.

2.3 Paliyar Tribals

The indigenous people of the study area are called Paliyar/Paliyan. They are found in the hilly regions of Madurai, Dindigul, Theni, Thirunelveli, and Virudhunagar districts. It is belived that paliyars are indigenous people of Palani hills (Situated near to Kodaikanal a famous tourist place). In the Palani hills they are found at an altitude of up to 2200m. Generally Paliyars are illiterate and they speak Tamil (Mother tongue of Tamil Nadu). Paliyars when compared to various tribal communities in Tamil Nadu constitute relatively a small group.

Paliyars can be grouped into three categories based on their life styles, namely, Nomadic, Seminomadic and Settled Nomadic Paliyars don't built houses, they live temporarily in rock caves called "Pudai" Semi nomadic Paliyar build temporary house and confine themselves to small territories most of their huts are dark with no window or any other opening to admit air. Settled Paliyar's are almost urbanized and live as agricultural laborers. Importance of traditional and folk medicine in the treatment of various human ailments is well recognized amongst these people (Sankarasivaraman, 2000) [45]. (Fig: 1.b).

Fig 1(b): Author Interview with Paliyar's Tribes

3. Results and Discussions

In the present ethnomedicinal plant survey revealed that the total of 150 species are used as medicines for their various treatments in human healthcare in Paliyar tribes (Table-1). In our study the tribes are commonly used for (52 sps) herbs were there major source of medicine followed by (48 sps) trees, (27 sps) climbers, (21 sps) shrubs and Succulent 2 (Fig. 2). The finding that more herbs are used in folklore medicine in the study area is in line with the previous results reported on the same (Shanmugam *et al*., 2008; Umapriya *et al*., 2011; Bosco *et al*., 2012) [49, 57, 10]. This unanimity in result suggests that herbs are the most frequently used plant forms by people of Western Ghats. This could be due to the fact that herbs grow readily well in moderate climate and also that they can be easily accessed. Furthermore, evidence is mounting that the biodiversity of herbaceous plants are rich in the vicinity of indigenous groups residing in Western Ghats, Tamil Nadu, India (Verma *et al*., 2008; Mesfin *et al*., 2009) [59, 29].

The maximum number of Euphorbiaceae (12 sps) family was dominantly used followed by, Apocynaceae (8 sps), Lamiaceae and Solanaceae in each (7sps), Asteraceae (6 sps), Amaranthaceae, Fabaceae, Mimosaceae in each (5 sps), Asclepiadaceae, Convolvulaceae, Cucurbitaceae, Malvaceae, Rubiaceae and Rutaceae in each (4 sps), Acanthaceae,

Caesalpiniaceae, Combretaceae, Liliacae in each (3 sps) and remaining families were one are two species in each. In Koya tribes are dominantly used for Euphorbiaceae, Fabaceae and Malvaceae were leading families of the Malluru Hill region to derive their remedy (Medisetti Narendar *et al*., 2016; Prabhu *et al*., 2014) [58, 38].

In the study region plant parts wise leaves (72%) are mostly used for medicinal purpose to compare in other plant parts in Paliyar and other tribes in elsewhere. Hence the leaves are easily collected and available in throughout the year to use multipurpose for different medicine preparation. Followed by leaves the other plant parts wise whole plants (23), fruits (22), root (20), bark (11), flower (9), seeds (8), root bark (3), rhizomes (2) and tuber (2) (Fig: 3). Fresh leaves were more frequently used when compared to other parts of the plant. However, in most of the cases, it was recorded that internal uses predominates external application as reported in our earlier studies (Ramya *et al*., 2009; Sivaperumal *et al*., 2009; Ghorbani, 2005; Lingaiah *et al*., 2013; Mayilsamy *et al*., 2013; Vijayalakshmi *et al*., 2014; Suresh *et al*., 2012) [42, 52, 14, 25, 27, 60, 55].

The uses of various Ethnomedicinal plants against the common disease like Skin diseases (25 %), Stomachache (22%), wound (17 %), Cough (16 %), Asthma (15 %), Diarrhoea (14 %), Jaundice (13 %), Cold, Fever and Ulcer (11 %), Headache (10 %), Kidney problems (9 %), Diabetic (8 %) Leprosy, Leucoderma and Snakebites (7 %), Body pain and Liver disorders (6 %), Gonorrhoea, Nervous disorders and Rheumatism (5 %), Anemia, Malaria and Sperms counts (4 %), Cancer, Eye diseases, Paralysis and Piles (3 %) and Hernia (2 %) (Fig: 4). Tribals used different plants in external applications mostly for skin diseases and internal consumption of the preparations were involved in the treatment of diseases (Nadanakunjidam 2003; Thirupathi 2015; Ali *et al*., 2002; Katewa *et al*., 2003) [31, 56, 2].

Table 1: List out the Ethnomedicinal plants in Sadhuragiri hills

S. No	Botanical Name	Family	Tamil name	Habit	Parts used	Medicinal uses
1	*Abrus precatorius* L.	Fabaceae	Kundu Mani	Climber	Seed	Increase sperm count and stomach pain.
2	*Abutilon indicum* G. Don.	Malvaceae	Thuthi	Shrub	Leaves	Leprosy, ulcers, headaches, gonorrhea, liver disorders, jaundice and bladder infection.
3	*Acacia nilotica* Willd	Mimosaceae	Karuvelam	Tree	Stem	Toothache, leucoderma, dysentery and seminal weakness.
4	*Acacia torta* Craib.	Mimosaceae	Enkai	Tree	Leaves	Cough, bronchitis, measles, tubercular fistula and in the treatment of menstrual disorders.
5	*Acalypha indica* L.	Euphorbiaceae	Kuppaimeni	Herb	Leaves	Ringworm, Rheumatoid arthritis, Scabies, bedsores and infected wounds.
6	*Achyranthes aspera* L.	Amaranthaceae	Nauruvi	Herb	Leaf	Skin diseases.
7	*Achyranthes bidentata* Blume.	Amaranthaceae	Sighappunayuruvi	Herb	Leaves &Roots	Asthma, antidote, contraceptive and night blindness.
8	*Acorus calamus* L.	Acoraceae	Vasambu	Herb	Rhizomes	Tpilepsy,sdedative, analgesic, and hypertensive.
9	*Adhotoda vasica* Nees.	Acanthaceae	Adathodai	Shrub	Leaves	Cold and cough.
10	*Aegle marmelos* (L.) Correa	Rutaceae	Vilvam	Tree	Leaves &fruits	Asthma, anemia, fractures, healing of wounds, swollen joints, high blood pressure, jaundice, diarrhoeaand troubles during pregnancy.
11	*Aerva lanata* (L.) A. L. Juss. Ex Schultes	Amaranthaceae	Poolai	Herb	Leaves	Gonorrhea, headache, kidney disorders, sugar in urine, dissolves the stone and to clear the urinary path.
12	*Ageratum conyzoides* L.	Asteraceae	Mookuthi poo	Herb	Whole plant	Diarrhea.
13	*Ailanthes excels* Roxb.	Simarubaceae	Peenarimaram	Tree	Leaves	Paralysis.
14	*Alangium salvifolium Wang.*	Alangiaceae	Maradakodi	Tree	Leaves	Chest burning.
15	*Albizzia amara Boiv.*	Mimosaceae	Usilai	Tree	Leaves	Diarrhea, gonorrhea, skin diseases, poisonous bites and leprosy.
16	*Aloe vera* L.	Liliacae	*Chottukattalai*	Herb	Whole plant	Laxative, Wound healing, Skin burns and Ulcer.
17	*Amaranthus spinosus* L.	Amaranthaceae	MulluKeerai	Herb	Leaves& Root	Stomach ulcer.
18	*Anacardium occidentale* L.	*Anacardiaceae*	*Munthiri*	Tree	Fruits &seed	Husk oil and cracks on heal.
19	*Andrographis paniculata* (Burm.f.) Nees	Acanthaceae	SiriyaaNangai	Herb	Whole plant	Snake-bite, poisonous stings of some insects, cold, hypertension, diabetes, cancer, malaria, influenza, dysentery, malaria and respiratory infections.
20	*Anisomeles malabarica*, (L.) *R.Br. ex Sims*	Lamiaceae	Paeimiratti	Shrub	Leaves	Fevers, colic, boils, tetanus, inflammation, cough, cold, stomachache, itches and uterine affections.
21	*Argemone mexicana* L.	*Papaveraceae*	Mookuthipoo	Herb	Whole plant	Cough asthma, wounds, dropsy, jaundice, skin diseases, leprosy, blisters, conjunctivitis, inflammation, burning sensation and malarial fever.
22	*Aristolochia bracteolata* L.	Aristolochiaceae	Aaduthinnapaalai	Climber	Whole plant	Dermatitis, allergic disorder, leprosy, jaundice.
23	*Asparagus racemosus* Willd.	Liliaceae	Thanneervitankizhangu	Climber	Tuber	A kidney disorder, stomach ulcers, liver cancer, increases milk secretion in nursing mothers and regulates sexual behaviors.
24	*Azadirachta indica* A. Juss.	Meliaceae	Veambu	Tree	Leaves &bark	Removal of harmful worms in stomach and bacterial tumors.

25	*Azima tetracantha* Lamk.	Salvadoraceae	Mullukuthichedi	Shrub	Leaves	Cold and cough.
26	*Bambusa arundinacea* Willd	Bambusaceae	Moongil	Tree	Stem	Nervous disorders.
27	*Begonia malabarica* Lam.	Begoniaceae	Kayalpulli	Shrub	Leaves	Wounds.
28	*Boerhaavia diffusa* L.	Nyctaginaceae	Mukurattai	Herb	Whole plant	Cough, skin diseases and jaundice.
29	*Borassus flabellifer* L.	Arecaceae	Panai	Tree	Flower & fruit	Eye problem and body cooling.
30	*Bridelia retusa* (L.) A. Juss.	Euphorbiaceae	Mulveangai	Tree	Fruit	Body pain relief.
31	*Calotrophis gigantea* L.	Asclepidaceae	Erukku	Tree	Flower	Snake bite, dog bite and scorpion bite.
32	*Calotropis procera* (Aiton) W.T.Aiton	Asclepidaceae	Vellerukku	Tree	Flower	Dysentery, Cold, Cough and Asthma.
33	*Canthium coromandelicum* (Burm.f.) Alston	Rubiaceae	Kaarai	Tree	Fruit	Dysentery,body heat, and reduce hemorrhage.
34	*Cardiospermum halicacabum* L.	Sapindaceae	Mudakathan	Climber	Leaves	Diuretic, emetic, purgative, buboes, sore eyes, aperients, rheumatism and nervous disorders.
35	*Carissa carandas* L.	Apocynaceae	Kalakka	Tree	Leaves	Fever, cough.
36	*Cassia alata* L.	Caesalpiniaceae	Vandukollu	Shrub	Leaves	Skin diseases.
37	*Cassia auriculata* L.	Caesalpiniaceae	Avarai	Shrub	Flower	Diabetes, liver toxicity, fungal infection, microbial infection, pyrexia and to relieve pain.
38	*Cassia fistula* L.	Caesalpiniaceae	Sarakonnai	Tree	Bark	Stomachache.
39	*Catharanthus roseus* (L.) G.Don	Apocynaceae	Nithyakalyani	Shrub	Leaves &root	Haemostatic and tooth ache.
40	*Cayratia pedata* (Lam.) A. Juss. Ex. Gagnep.	Vitaceae	Pannikodi	Shrub	Leaves	Ulcer, Scabiesand stomach disorder.
41	*Celastrus paniculatus* Willd.	Celastraceae	Mal kangani	Tree	Seed	Memory loss curing.
42	*Celosia argentea* L.	Amaranthaceae	PannaiKeerai	Shrub	Leaves	Diarrhea, antiprotozoal and spasmolytic.
43	*Ceropegia juncea* Roxb.	Apocynaceae	Vaelipulichan	Climber	Steam	Digestion and stomach problems.
44	*Cinnamomum verum* J.Presl	Lauraceae	Karuvapattai	Tree	Leaves & bark	Asthma, toothache, abdomen pain and diarrhoea.
45	*Cinnamomum zeylanicum* J.Presl	Lauraceae	Elavangam	Tree	Leaves & bark	Vomiting cardiac disease, dysentery, fever, skin disease and general debility.
46	*Cipadessa baccifera* (Roth) Miq.	Meliaceae	Semmatti	Shrub	Leaves	Stomach disorders.
47	*Cissus quadrangualris* L.	Vitaceae	Pirandai	Climber	Leaves	Woundsandbone fractures.
48	*Citrullus colosynthis* Schrad	Cucurbitaceae	Kumbattikai	Herb	Leaves &stem	Jaundice, asthma, tumors, leucoderma, ulcers, asthma, bronchitis, and urinary discharge
49	*Citrus limon* (Linn.)Burm. F.	Rutaceae	Ellumechai	Tree	Fruit	Nail infection and nervous disorders.
50	*Cleome viscosa* L.	Cleomaceae	Nayiveli	Herb	Seed	Anthelmintic and liver problems.
51	*Clitoria ternatea* L	Fabaceae	Sangupushapam	Climber	Fruit	Insects and scorpion bites.
52	*Coccinia indica* W.	Cucurbitaceae	Kovaikai	Climber	Leaves	Stomach internally for ulcer.
53	*Cocculus hirsutus* Diels.	Menispermaceae	Kattukkodi	Climber	Leaves &root	Eczema, stomach problems andrheumatism.
54	*Coleus aromaticus* Benth.	Laminaceae	Omavalli	Herb	Leaves	Skin sores, ulcers, boils, sprain, swelling and throat pain.
55	*Commelina benghalensis* L.	Commelinaceae	Kanavazhai	Herb	Whole plant	Swellings of the skin, leprosy and laxative.
56	*Cheilocostus speciosus* (J.Konig) C.Specht	Zingiberaceae	Koshtam	Herb	Root	Woundliver diseases and hepatitis.
57	*Crescentia cujeta* L.	Bignoniaceae	Tiruvottukkai	Tree	FruitsBark	Diuretic, aperients and febrifuge.
58	*Cryptolepis dubia* (Burm.f.)M.R. Almieda	Apocynaceae	Nagathali	Shrub	Root bark	Snake bite and other venomous bites.
59	*Cucumis trigonus* Roxb. C	Cucurbitaceae	Kattukumatti	Climber	Fruit	Antitussive, digestive, diuretic,emetic,expectorant, febrifuge, stomachic and vermifuge.
60	*Cymbopogan citratus* (DC.) Stapf.	Poaceae	Vasannaipullu	Herb	Whole plant	Volatile oil, arthritic pain. Juice from the leaves is taken internally with milk for expelling gas from the body.
61	*Cynodon dactylon* (L.)Pers.	Poaceae	Arugampullu	Herb	Wholeplant	Diuretic and stomach disorder.
62	*Cyperus rotundus* (L.)	Cyperaceae	Korakkizhangu	Herb	Root	Bloody body health, stool and kills intestinal worms.
63	*Datura fastuosa* L.	Solanaceae	Karuoomathai	Herb	Leaves & flower	Asthma or wheezing like Ear ache symptoms.
64	*Datura metal* L.	Solanaceae	Oomathai	Shrub	Fruit	Antispasmodic, analgesic, and anesthetic, used in joint pain.

65	*Dillenia pentagyna* Roxb.	Dilleniaceae	*Naitheakku*	Tree	Leaves & flower	Stomach-ulcer and stomachic.
66	*Dioscorea oppositifolia* L.	Dioscoreaceae	Vallikilangu	Climber	Root	Chronic diarrhoea, asthma, dry coughs and diabetes.
67	*Dodonea viscosa* (L.) Jacq.	Sapindaceae	Virali	Tree	Leaves	Skin diseases particularly scabies, eczema and acne.
68	*Eclipta prostrata* L.	Asteraceae	Karisalanganni	Herb	Whole plant	Jaundice.
69	*Enicostemma littorale* L.	Gentianaceae	Vallarugu	Herb	Root	Used as a tooth brush and cure tooth ache.
70	*Erythrina indica* L.	Fabaceae	Kalyanamurungai	Tree	Leaves	Uterus problem and sperm count and wounds.
71	*Euphorbia microphylla* Murray	Euphorbiaceae	Palperukki	Herb	Leaves	Constipation.
72	*Euphorbia heterophylla* L.	Euphorbiaceae	PaalPoodu	Herb	Leave	Stomach problems and to treat dysentery
73	*Euphorbia hirta* L.	Euphorbiaceae	Ammaanpachcharsi	Herb	Leaves& fruit	Leucorrhoea and to keep the body cool.
74	*Evolvulus alsinoides* L.	Convolvulaceae	Vishnukaranthai	Herb	Whole plant	Brain disorders, epilepsy, nervous problems
75	*Feronia limonia* Swingle	Rutaceae	Velam	Tree	Leaves & fruit	Cardiac tonic, diarrhea, dysentery and sore throat.
76	*Ficus retusa* L.	Moraceae	Athimaram	Tree	Fruit	Swellings, diabetes and fractured bones.
77	*Gloriosa superba* L.	Liliaceae	Senganthal	Climber	Rhizome	Poisonous bite and skin diseases.
78	*Gymnema sylvestre* R.Br.ex.Sch.	Asclepiadaceae	Sakarakolli	Climber	Leaves	Reduce blood sugar level.
79	*Hemidesmus indicus* R.Br.	Apocynaceae	Nannari	Climber	Roots	Coolant and mouth ulcers.
80	*Hibiscus rosa-sinesis* L.	Malvaceae	Seamparuthi	Tree	Flower	Diabetics, hair oil and cosmetic.
81	*Holoptetea integrifolia* L.	Ulmaceae	Ayamaram	Tree	Bark	Wound infected.
82	*Hybanthus enneaspermus* (L.) F. Muell	Violaceae	Orithazhthamara	Herb	whole plant	Leucorrhoea and improves potency.
83	*Hyptis suaveolens* (L.) Poit.	Lamiaceae	Nattupoocheadi	Shrup	Leaves	Colic disorders and stomachache.
84	*Ipomoea batatas* L.	Convolvulaceae	Carkkaraivalli	Climber	Tuber	Diabetics.
85	*Ipomoea obscura* (L.)Ker-Gawl.	Convolvulaceae	Siruthali	Climber	Leaves	Eye diseases
86	*Ipomoea staphylina* Roem. & Schult.	Convolvulaceae	Oonankodi	climber	Root	Snake-bite.
87	*Jasminum SessiliflorumVahl.*	Oleaceae	Kuruvilankodi	Climber	Leaves	Diahhroea
88	*Jatropha curcas* L.	Euphorbiaceae	Amanakku	Tree	Seeds	Paralysis, dropsy, externally for skin troubles.
89	*Justicia adhotoda* L.	Acanthaceae	Adathoda	Shrub	Leaf	Diarrhea and dysentery.
90	*Lantana camara* L.	Verbenaceae	Unnichedi	Shrub	whole plant	Rheumatoid arthritis and severe fever.
91	*Lawsonia inermis* L.	Lythraceae	Maruthani	Tree	Leaves	Prophylactic against and skin troubles.
92	*Leucas aspera* Spreng.	Lamiaceae	Thumbai	Herb	Leaves	Swelling, cough and cold.
93	*Mimosa pudica* L.	Mimosaceae	Thottasinnugi	Climber	Leaf & Root	Skin infusion diarrhoea and wounds.
94	*Mimusops elengi* L.	Sapotaceae	Maghizam	Tree	Leaves	Fever, diarrhoea and head ache.
95	*Mirabilis jalapa* L.	Nyctaginaceae	Anthimantharai	Herb	Root	Diuretic, purgative, syphilis, inflammation, burns and scalds, and general debility.
96	*Mukkia madraspatna* (L.) M.Roemer	Cucurbitaceae	Musumusukai	Climber	Leaves	Cough, Stomach ache.
97	*Murraya koenigii* (L.) Spreng.	Rutaceae	Kariveppelai	Tree	Leaves	Worms and hair growth.
98	*Musa paradisiaca* L.	Musaceae	Valzhai	Tree	Stem	Kidney stones.
99	*Naravelia zeylanica* (L.) DC.	Ranunculaceae	Mookeripankodi	Climber	Leaves	Rheumatic and painful conditions caused by inflammation.
100	*Nerium indicum* L.	Apocynaceae	Aralli	Tree	Leaves	Leprosy.
101	*Ocimum basilicum* L.	Lamiaceae	Pachilai	Herb	Leaves	Earache, cold and urinary troubles.
102	*Ocimum sanctum* L.	Lamiaceae	Tulasi	Herb	Leaves	Cough fever and cold.
103	*Oldenlandia umbellata* L.	Rubiaceae	Sayver	Herb	Whole plant	Wounds for fast healing.
104	*Opuntia dillenii* Haw.	Cactaceae	Sappathikali			Gonorrhoea, menorrhagia, leucorrhea, snake bite and dog bite.
105	*Oxalis corniculata* L.	Oxalidaceae	Puliyarai	Herb	Leaves & roots	Urinary troubles and gonorrhea.
106	*Pedalium murex* L.	Pedaliaceae	Yaanainerungil	Herb	Fruit	Cough cold, antiseptic and urinary track disorders.
107	*Pergularia daemia* (Forssk) Chior.	Asclepiadaceae	Veliparuthi	Climber	Leaves	Headache, joint pain and asthma.
108	*Phyllanthus niruri* L.	Euphorbiaceae	Kezlanelli	Herb	Whole plant	Jaundice, diabetes, urinary infections and intermittent fever.
109	*Phyllanthus maderaspatensis* L.	Euphorbiaceae	Mellanelli	Herb	Whole plant	Diuretic, headache, jaundice.

110	*Phyllanthus emblica* L.	Euphorbiaceae	Nelli	Tree	Fruit	Dysentery, diabetes, itches, piles, jaundice and ulcer.
111	*Phyllanthus amarus* Schult& Thorn	Euphorbiaceae	Kezhanelli	Herb	Whole plant	Jaundice.
112	*Phyllanthus virgatus* G. Forst.	Euphorbiaceae	Perukeelanelli	Herb	Whole plant	Bleeding.
113	*Physalis peruviana* L.	Solanaceae	Perungunni	Herb	Leaves &seed	Jaundice and glaucoma.
114	*Piper longum* L.	Piperaceae	Thippili	Climber	Seed	Asthma, fever and Cough.
115	*Piper nigrum* L.	Piperaceae	Mellakku	Climber	Seed	Cough cold, asthma hoarseness and hiccup.
116	*Pithecolobium dulce* (Roxb.) Benth.	Fabaceae	Kodukkapuli	Tree	Root bark	Dysentery
117	*Plumbago zeylanica* L.	Plumbaginaceae	Chithiramulam	Shrub	Roots	Fever, skin diseases, diuretic and dyspepsia.
118	*Polygonum plebeium* R.Br.	Polygonaceae	Kanganichedi	Herb	Root	Inflammations.
119	*Portulaca oleracea* L.	Portulacaceae	Paruppukeerai	Herb	Whole plant	Burns, cardio vascular diseases, cholesterol reducer, fever, diarrhoea, diabetes, headache, ulcers, urinary disorders and wounds.
120	*Randia dumetorum* Lamk.	Rubiaceae	Kaarai	Tree	Fruit	Skin diseases.
121	*Rauwolfia serpentina* Benth. ex Kurz	Apocynaceae	Sarpagaantha	Herb	Leaves	Controlling high blood pressure.
122	*Ricinus communis* L.	Euphorbiaceae	Kottaimuthu	Tree	Leaves	Heat to relieve headache.
123	*Rubia cordifolia* L.	Rubiaceae	Chevvalikodi	Climber	Leaves & root	Scorpion sting and dizziness.
124	*Rubus ellipticus* Sm.	Rosaceae	Vella mulli	Herb	Root	Paralysis, dysentery and diarrhea.
125	*Santalum album* L.	Santalaceae	Santhanam	Tree	Stem	Itching and body cooling.
126	*Sesbania grandiflora* Pers.	Fabaceae	Agathi	Tree	leaves	Dysentery, stomachache and eliminate worms.
127	*Sida cordifolia* L.	Malvaceae	Nilathuthi	Herb	Leaves	Nerve pain, muscle cramps, skin disorders, wounds, ulcers, scorpion sting, snakebite, and as a massage oil.
128	*Solanum nigrum* L.	Solanaceae	Manathakkali	Shrub	Fruit	Stomach ulcer.
129	*Solanum surattense Burm.f.*	Solanaceae	Kandankathiri	Herb	Whole plant	Toothache
130	*Solanum trilobatum* L.	Solanaceae	Thuthuvelai	Shrub	Leaves	Cough, fever, cold and asthma.
131	*Tamarindus indica* L.	Fabaceae	Pulli	Tree	Leaves	Bleeding piles.
132	*Tephrosia purpurea* Pers.	Fabaceae	Kozhinji,	Herb	Whole plant	Anemia, asthma, elephantiasis, Inflammation, piles, tooth ache, skin diseases, stomach pains.
133	*Terminalia arjuna* (Roxb.) Wight &Arn	Combretaceae	Marutham	Tree	Bark	Cardiac problems.
134	*Terminalia bellerica* Roxb.	Combretaceae	Thaanthi	Tree	Bark & Root	Unnecessary peelings on the skin.
135	*Terminalia chebula* Retz.	Combretaceae	Kadukkai	Tree	Seed	Wound ulcer, leprosy, inflammation and Cough.
136	*Thespesia populnea* (L.) Sol.	Malvaceae	Poovarasu	Tree	Bark & fruit	Skin diseases.
137	*Tinospora cordifolia* (Willd.)Milers.	Menispermaceae	Cheenthil	Climber	Leaves	Diabetes.
138	*Trianthema portulacastrum* L.	Aizoaceae	Saaranai	Herb	Leaves	Asthma, constipation, diuretic and edema.
139	*Tribulus terrestris* L.	Zygophyllaceae	Nerunjii	Herb	Fruits &leaves	Urinary troubles and cuts and wounds.
140	*Trichodesma zeylanica*, (Burm.f). R.Br.	Boraginaceae	Kattetumbegida	Herb	Leaves	Snake bite.
141	*Tridax procumbens* L.	Asteraceae	Vettukayapoondu	Herb	Leaves	Cuts and wounds.
142	*Triumfetta rhomboidea* Jacq	Tiliaceae	Elumpottiveru	Shrub	Root	Bone fracture.
143	*Vernonia cinerea* (L) Less.	Asteraceae	Mukuthipundu	Herb	Flowers&roots	Anthelmintic, fever, skin disease, cough, stomachache and diarrhoea.
144	*Vernonia elaeagnifolia* DC	Asteraceae	Kattupachai	Herb	Leaves	Body ache.
145	*Vitex negundo* L.	Verbenaceae	Notchi	Tree	Leaves	Cold and headache.
146	*Withania somnifera* (L.) Dunal	Solanaceae	Ammukira	Herb	Whole plant	improve sexual vigor
147	*Wrightia tinctoria* R.Br.	Apocynaceae	Pallai	Tree	Leaves	Skin diseases.
148	*Xanthium indicum* (L.) Koen.	Asteraceae	Ottuchedi	Shrub	Leaves	Toothache
149	*Ziziphus mauritiana* Linn.	Rhamnaceae	Elanthai	Tree	Fruit & bark	Paralyze.
150	*Ziziphus oenoplia* Mill	Rhamnaceae	Churipala	Climber	Fruit & Bark	Diarrhea.

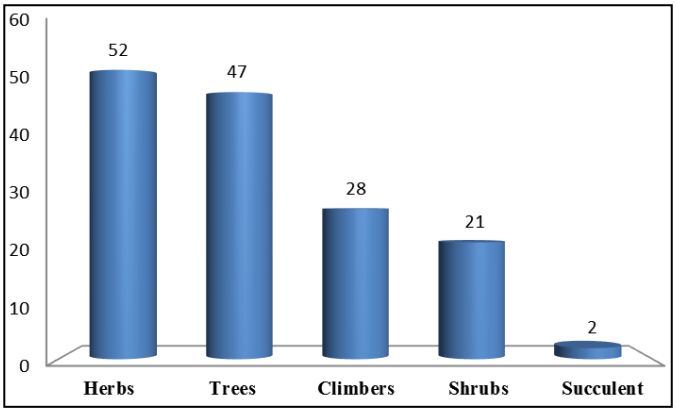

Fig 2: Distribution analyses of remedies obtained from different plant parts

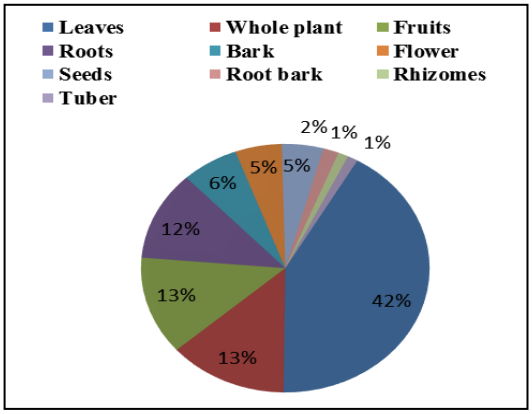

Fig: 3 Distribution analyses of remedies obtained from different plant parts

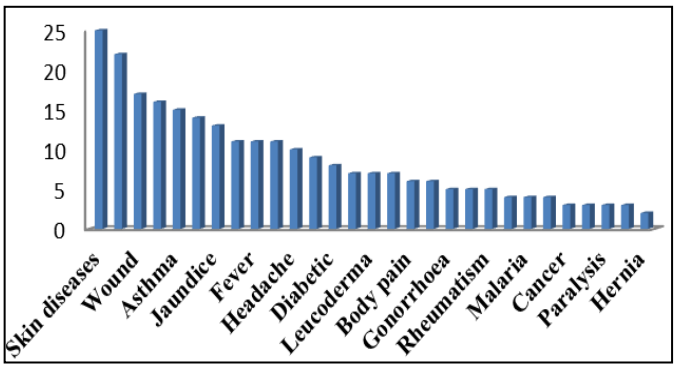

Fig 4: Frequency of medicinal plants used to cure diseases

4. Conclusion

The information obtained from this ethnobotanical study is to ensure the therapeutic efficiency of the traditional medicinal plants, which may be used as leads in developing novel therapeutic agents. Since the users are based on empirical knowledge, scientific studies of all these herbal drugs are highly desirable to establish their efficiency for safe use. This study revealed that the above medicinal plants have been only sparingly investigated for their constituents and hence the collected information may be useful for researchers in the field of ethnobotany, taxonomy and pharmacology.

5. Acknowledgement

The authors would like to thank the Paliyar Tribals in Sadhuragiri hills and local people for their valuable indigenous knowledge transfer. We are also thankful to the Tamil Nadu Forest Department, Warden of the Grizzled Squirrel Wildlife Sanctuary Srivilliputhur and forest Officers for their co-operation during field works.

6. References

1. Alagesaboopathi C. Ethnomedicinal Plants Used as Medicine by the Kurumba Tribals in Pennagaram Region, Dharmapuri District of Tamil Nadu, India. Asian J. Exp. Biol. Sci. 2011; 2:140-2.
2. Ali ZA, Singh K. Plants used for the treatment of skin diseases in the sub-Himalayan TaraiRegion of Uttar Pradesh, India. Recent Progress in Medicinal plants.Ethnomedicine and Pharmacognosy, (SCI Tech Publishing LLC, Houston, Texas, (USA). 2002, 55-62.
3. Al-Quran S. Ethnobotanical survey of folk toxicplants in southern part of Jordan.Toxicon. 2005; 46:119-126.
4. Anonymous. Ethnobotany in the search for new drugs.Ciba Foundation Symposium188, John Wiley and Sons, New York, 1994.
5. Awadh A, Ali N, Al-rahwi1K, Lindequist U. Some medicinal plants used in Yemeni herbal medicine to treat Malaria. African journal of Traditional, Complementary and Alternative Medicines. 2004; 1:72-76.
6. Ayyanar M, Ignacimuthu S. Traditional Knowledge of Kanitribals in Kouthalai of Tirunelveli hills, Tamil Nadu, India. J. Ethnopharmacol. 2005; 102:246-255.
7. Ayyanar M, Sankarasivaraman K, Ignacimuthu S. Traditional Healing Potential of Paliyars in Southern India, Ethnobotanical Leaflets. 2008; 12:311-317.
8. Azaizeh HS, Fulder K, Khalil Said O. Ethnomedicinal knowledge of local Arabpractitioners in the Middle East Region. Fitoterapia. 2003; 74:98-108.
9. Bhawana Kapkoti, NeeluLodhiyal LS, Lodhiyal. Ethno-Medicinal Plants And Their Uses By Van Panchayat People In Nainital Of Kumaun Region, Uttarakhand, An International Quarterly Journal Of Biology & Life Sciences. 2014; 2(2):526-532.
10. Bosco FG, Arum gam R. Ethnobotany of irular tribes in red hills, tamilnadu, India. Asian Pacific Journal of Tropical Disease. 2012; 2(2):S874-S877.
11. Chadha KL, Gupta R. (eds). Advances in Horticulture: Medicinal and Aromatic Plants Vol. 11. Malhotra Publishing House, New Delhi, India from Aravali hills of Rajasthan. Indian J. Traditional Knowledge. 1995; 2(1):27-39.
12. Gamble JS. Flora of the Presidency of Madras. Vol. I-III. Allard &Co. London (Reprinted – 1956). Botanical Survey of India, Culcutta, 1936.
13. Ganesan S, Suresh N, Kesavan L. Ethnomedicinal survey of lower Palni Hills of Tamil Nadu. Indian Journal of Traditional Knowledge. 2004; 3(3):299-304.
14. Ghorbani A. Studies on pharmaceutical ethnobotany in the region of Turkmen Sahra, north of Iran (Part 1): general results. J Ethnopharmacol. 2005; 102:58-68.

15. Henry AN, Kumarai GR, Chitra V. Flora of Tamilnadu, India,series 1: Analysis, Botanical Survey of India, Southern Circle, Coimbatore, Tamilnadu, India, 1987.
16. Ignacimuthu S, Ayyanar M, Sankara Sivaraman K. Ethnobotanical investigations among tribes in Madurai District of Tamil Nadu (India) J Ethnobiol Ethnomed. 2006; 2:25-30.
17. Jain SK, Rao RR. A Handbook of Field and Herbarium Methods. Today and tomorrow's Printers and Publishers, New Delhi, 1977.
18. Jain SK. Mannual of Ethnobotany, 2nd Edn. Scientific Publishers, Jodhpur, India, 1995.
19. Jain SK. Dictionary of Indian Folk Medicine and Ethno botany. Deep Publication, New Delhi, India, 1991.
20. Karuppusamy Arunachalam, Thangaraj Parimelazhagan. Ethonomedicinal observations among Hooralis tribes in Kadambur Hills (Kalkadambur), Erode district, Tamilnadu.Global J. Pharmacol. 2011; 5(3):117-121.
21. Kosalge SB, Fursule RA. Investigation of ethnomedicinal claims of some plants used by tribals of Satpuda Hills in India. Journal of Ethnopharmacology. 2009; 121:456-461.
22. Kumar S, Hassan SA, Dwivedi S, Kukreja AK. A Sharma, AK Singh, *et al*. (eds). Proceedings of the National Seminar on the Frontiers of Research and Development in Medicinal Plants, 16-18 September 2000. Journal Medicinal and Aromatic Plant Sciences Vol. 22/4A and Vol. 23/1A.Central Institute of Medicinal and Aromatic Plants (CIMAP). Lucknow, India, 2000.
23. Laila Banu NR, Sreeja S, Pinky VR, Prakash JW, Jeenath Jasmine A. Medicinal plants used by the rural people of Kattathurai, Kanyakumari district, Tamil Nadu. J Basic &ApplBiol. 2007; 1(1):18-22.
24. Latif A, Ismail G, Omar M, Said M, Kadri MIA. A multivariate approach to thestudy of medicinal plants in Malaysia.Singapore National Academy of Science. 1984; 13:101-113.
25. Lingaiah M, Nagaraja Rao P. An Ethnobotanical Survey of Medicinal Plants used by Traditional healers of Adilabad District, Andhra Pradesh, India, bio Life An International Quarterly. Journal of Biology & Life Sciences. 2013; 1(1):17-23.
26. Matthew KM. The Flora of Tamilnadu Carnatic, TheRapinat Herbarium, Tiruchirapalli, Tamilnadu, India, 1983, 1-3.
27. Mayilsamy M, Rajendran A. Etheno medicinal plants used by the paliyar tribes for Dermatological diseases, Journal of Ecology. 2013; 32(1):45-55.
28. Medisetti Narendar, Mustafa Md. An Ethnobotanical Study of Medicinal Plants Used By Koya Tribes In And Around Malluru Hill Region, Warangal District, Telangana, India. International Journal of Applied Biology and Pharmaceutical Technology. 2016; 103-113.
29. Mesfin F, Demissew S, Teklehaymanot T. An ethnobotanical study of medicinal plants in Wonago Woreda, SNNPR, Ethiopia, Journal of Ethnobiology and Ethno medicine. 2009; 5:1.
30. Mohana VR, Rajeshb A, Athiperumalsamia T, Suthac S. Ethnomedicinal Plants of the Tirunelveli District, Tamil Nadu, India.Ethnobotanical Leaflets. 2008; 12:79-95.
31. Nadanakunjidam S. Ethnomedicinal observation from attapadi hills of western. Ghats. J. Econ. and Taxan. Bot. 2003; 27(3):732-740.
32. Namsa ND, Tag H, Mandal M, Kalita P, Das AK. Anethnobotanical study of traditional anti-inflammatory plants used by the Lohit community of Arunachal Pradesh, India. Journal of Ethnopharmacology. 2009; 125:234-245.
33. Natarajan D, Balaguru B, Nagamurugan Soosiraj NS, Natarajan E. Ethnomedicobotanical survey in the Malligainatham village, Kandaruvakottai Taluk, Pudukottai district, Tamilnadu. Indian J. Traditional Knowledge. 2010; 9(4):768-774.
34. Osman M, Puteh M, Mohamad A. Potential crops from the wild, Prospects in Biodiversity Prospecting. (A.H. Zakri Ed). University Kebangsaan, Bangi. Rates, Plants as source of drugs. Toxicon. 1996; 39(5): 603-613.
35. Padal SB, Prayaga Murty P, Srinivasa Rao D, Venkaiah M. Ethnomedicinal plants from paderu division of visakhapatnam district, A.P, India, Journal of Phytology. 2010; 2(8):70-91.
36. Parthasarathy N, Pragasan AL, Muthumperumal C, Anbarashan M. Flora of Pondicherry University Campus. Puducherry: Pondicherry University Publication. 2010, 398.
37. Pattanaik C, Reddy CS, Murthy MS. An ethnobotanical survey of medicinal plants used by the Didayi tribe of Malkangiri district of Orissa, India. Fitoterapia. 2008; 79:67-71.
38. Prabhu S, Vijayakumar S, Morvin Yabesh JE, Ravichandran K, Sakthivel B. Documentation and quantitative analysis of the local knowledge on medicinal plants in Kalrayan hills of Villupuram district, Tamil Nadu, India, J. Ethnopharmacol. 2014; 157:7-20.
39. Prajapati S, Bajpai S, Singh D, Luthra R, Gupta MM, Kumar S,. Alkaloid profiles ofthe Indian land races of the opium poppy PapaversomniferumL. Euphytica. 2002; 49(2):183-188.
40. Rajan S, Sethuraman M, Mukherjee PK. Ethno biology of the Nilgiri Hills, India. Phytotherapy Research. 2002; 16(2):98-116.
41. Rajasekharan PE, Ganeshan S. Conservation of medicinal plant biodiversity in Indian perspective. Journal of Medicinal and Aromatic Plant Sciences. 2002; 24(1):132-147.
42. Ramya S, Alaguchamy N, Maruthappan VM, Sivaperumal R, Sivalingam M, Krishnan A. Govindaraji V, Kannan K, Jayakumararaj R. Wound healing ethnomedicinal plants used by the Malayali tribes in Vattal Hills, Dharmapuri, TN, India Ethnobotanical Leaflets. 2009; 13:1257-1271.
43. Rossato SC, Leitao-Filho H, Gegossi A. Ethnobotanyof Caicaras of the Atlantic forest coast (Brazil). Econ. Bot. 1999; 53:387-395.
44. Sandhya B, Thomas S, Isabel W, Shenbagarathai R. Ethnomedicinal plants used by the valaiyancommunity of Piranmalai hills, Tamil Nadu, India – A pilot study. African Journal of Traditional, Complementary and Alternative Medicines. 2006; 3(1):101-114.
45. Sankarasivaraman K. Ethnobotanical wealth of Paliyar tribe in Tamil Nadu. Ph.D., Thesis,

Manonmanisundaranar University, Thirunelveli, 2000.
46. Sankaranarayanan S, Bapa P, Ramachandra J, Kalaichelvan PT, Deccaraman M, Vijayalkashmi M, *et al.* Ethnobotanical study of medicinal plants usedby traditional users in Villupuram district of Tamilnadu. India J. Med. Plant. Res. 2010; 4(12):1089-1101.
47. Savithramma N, Sulochana C, Rao KN. Ethnobotanical survey of plants used to treat asthma in Andhra Pradesh, India. Journal of Ethnopharmacology. 2007; 113:54-61.
48. Shanmugam S, Kalaiselvan M, Selvakumar P, Suresh K, Rajendran K. Ethnomedicinal plants used to cure diarrhoea and dysentery in Sivagangai district of Tamil Nadu, India. Int J Res Ayur Pharm. 2011; 2(5):991-994.
49. Shanmugam S, Ramer S, Ragavendhar K, Raman R, Rajendran K. Plants used as medicine by Paliyar tribes of Shenbagathope in Virudhunagar district of Tamil Nadu. Journal of Economic Taxonomy. 2008; 32(2):922-929.
50. Singh SP, Tripathi S, Shukla RS. Ethnomedicinal heritage for Bioprospecting and Drug development in North-Eastern States of India. Journal of Economic and Taxonomic Botany. 2003; 26:384-395.
51. Sinha RK. Ethnobotany, Shri Publisher, Jaipur, India, 1996.
52. Sivaperumal R, Ramya S, Veera Ravi A, Rajasekaran C, Jayakumararaj R. Herbal remedies practiced by Malayali's to treat skin diseases. Environment We International: An International Journal of Science and Technology. 2009; 4:65-74.
53. Suba M, Ayun Vinuba A, Kingston C. Vascular Plant Diversity in the Tribal Homegardens of Kanyakumari Wildlife Sanctuary, Southern Western Ghats. Biosci. Disc. 2014; 5(1):99-111.
54. Sukumaran S, Parthiban B. Vascular plant diversity of Udayagiri fort, Kanyakumari district, Tamilnadu, India.Bioscience Discovery. 2014; 5(2):204-217.
55. Suresh M, Ayyanar M, Amalraj L, Mehalingam P. Ethnomedicinal Plants used to treat Skin Diseases in Pothigai hills of Western Ghats, Tirunelveli District, Tamil Nadu, India; J. Bio. Sci. Res. 2012; 3(1):112-121.
56. Thirupathi M, Karthikeyan S. Ethnomedicinal Plants Diversity In Sirumalai Hills, Eastern Ghats, Dindugal District, Tamilnadu International, Journal of Research in Botany. 2015; 5(2):20-26.
57. Umapriya T, Rajendran A, Aravindhan V, Binu Thomas, Maharajan M. Ethnobotany of Irular tribe in Palamalai Hills, Coimbatore, Tamilnadu.Indian J Nat. Prod. Resour. 2011; 2(2):250-255.
58. Upadhyay B, Parveen Dhaker AK, Kumar A. Ethnomedicinal and ethnopharmaco-statistical studies of Eastern Rajasthan, India. Journal of Ethnopharmacology. 2010; 129:64-86.
59. Verma S, Singh S. Current and future status of herbal medicines. Veterinary world. 2008; 1:347-350.
60. Vijayalakshmi N, Anbazhagan M, Arumugam K. Studies on Ethno-medicinal plants used by the Irulas tribe of Thirumurthi Hill of Western Ghats, Tamil Nadu, India. International Journal of Research in Plant Science. 2014; 4(1):8-12.
61. Viswanathan MB, Premkumar EH, Ramesh N. Ethnomedicines of Kanis in KalakadMundanthurai Tiger Reserve, Tamil Nadu. Ethnobotany. 2001; 13:60-66.