



# MEDICO-BOTANICAL STUDIES OF ANGIOSPERMS FROM AVM CANAL BANK IN KANYAKUMARI DISTRICT, TAMILNADU, INDIA

J. Lohidas, B. Parthipan and A. Bency\*

Department of Botany and Research Centre, Scott Christian College, Nagercoil - 629 003,  
Kanyakumari District (Tamil Nadu), India.

## Abstract

This article deals with the medicinal plant diversity of Anantha Victoria Marthandavarma canal of Kanyakumari District, Tamil Nadu, India. The AVM canal is a prestigious water canal constructed by Marthandavarma, the king of former Travancore State. Eighty five medicinal plants were identified from the study area. All the plants studied have medicinal values, which are used to treat various human diseases. Some of them have antibacterial, antiviral and anti-poisonous effect. A threatened medicinal plant *Calophyllum inophyllum* identified from the study area is in the verge of extension. Therefore, the conservation of the medicinal plants is very important for the near future generation.

**Key words :** AVM canal, medico botanical, angiosperms, Kanyakumari and medicinal plants.

## Introduction

The knowledge on the healing value of plants is as old as the human beings itself. The medicinal plant has been utilized as an in exhaustive source of remedy for treating human disease, since ancient times. At the same many people do not know about surroundings. The Anantha Victoria Marthandavarma (AVM) canal was constructed by the king in July 1860 Marthandavarma Maharaja of former Travancore State. It was constructed with an intention to connect the water facilities with the extreme south part of the country. Geographically, Kanyakumari district was part of the Travancore State and ruled by the Travancore Kings. It is located at the southernmost tip of Peninsular India surrounded by Thiruvananthapuram district of Kerala to the west and Tirunelveli district of Tamil Nadu to the north and east. The three borders of this district are surrounded by the ocean and the northern side covers the Western Ghats. Both side of the AVM canal we can see variety of the value of the medicinal plants. Of course medicinal plants constitute very important natural resources of our herbs.

In Kanyakumari some of the medico-botanical researches have been brought out. Some workers have attempted the vegetational analysis of the banks of the river (Ambasht, 1968), Raighat ravines (Misra, 1944), Felix (2007) studied the riparian diversity of river

Tamiraparani of Kanyakumari district. Kingston *et al.* (2009) studied the Indigenous knowledge of using medicinal plants treating skin diseases in Kanyakumari district. Recently, medico-botanical studies on some angiosperms from eastern part of Mulla Dam, Ahmednagar district, Maharashtra State was performed by Auti and Jagdale (2008). At the same time no one studied to medico-botany on angiosperm on the bank of AVM canal and the vegetation has not yet been surveyed. Therefore, a survey was made during 2008-2009 to explore the important of the vegetation particularly their medicinal value.

## Materials and Methods

The present research work incorporates medico botanical studies on healing plants collected from Neerodi to Thadaeupuram in Kollencode revenue village segment (fig. 1) of the AVM canal bank region. Periodical visits were made to the study area during the study period for collecting fresh plant specimens. Plants were collected according to the field and herbarium techniques (Saxena, 1986). Collected plant specimens were kept in polythene bags to be in fresh condition for short periods. A field note book was used for recording observable plant characters in the field. For spot identification and to record their morphological characters, hand lens was used. Photographs of selected plants were also taken. To confirm the identification of the collected plant species

\**Author for correspondence:* E-mail: a.bencyprince@gmail.com

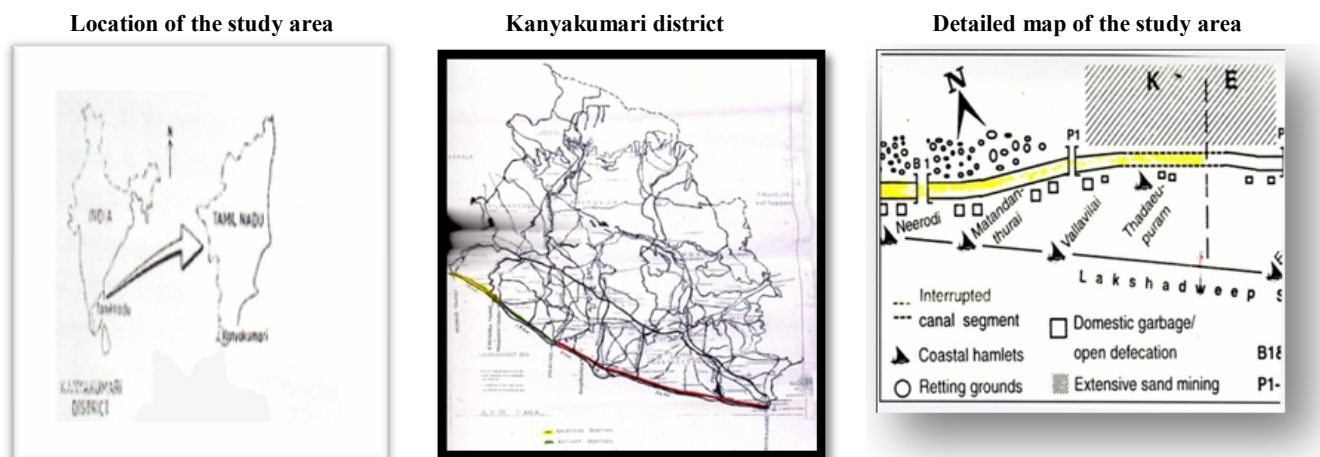


Fig. 1 :

from the study area, Flora of the Presidency of Madras, Gamble (1957), an excursion flora of central Tamil Nadu, India, Matthew (1991), Illustration Plants of Kerala by Nayer *et al.* (2006) were referred.

Traditional siddha vaidyars were interviewed and the information on the collected species was recorded. The medicinal uses were confirmed with earlier reports (Jain, 1991; Yoganarashiman and Chelladurai, 2000). The collected plant specimens were poisoned by dipping the whole plant in a saturated solution of mercuric chloride standard solution in ethyl alcohol for 15 to 20 seconds depending upon the thickness of the material. Poisoned specimens were pressed by using the plants press board for quick drying. After drying plant specimens were pasted on standard size herbarium sheets (28 × 42cm). The identified plants and their families were arranged according to the Bentham and Hooker's system. The species under each family were arranged in an alphabetical order. The identified plants were verified and confirmed by the voucher specimen and herbarium was deposited in the Department of Botany and Research Centre, S. T. Hindu College, Nagercoil-2 (Tamil Nadu), India. The description of the collected plant specimens were made by using Flora of the Presidency of Madras. List of Medicinal Plants identified in this study area (table 1).

## Results and Discussion

In the present investigation, 85 medicinal plants were collected from AVM canal bank. Of which, herbs 50 species (58.80%), shrubs 19 species (22.35%), trees 10 species (11.76%), climbers and twiners each one species (1.17%), and vine four species (4.07%). The medicinal plants collected from the study area belong to 34 angiospermic families and 71 genera. Among 34 angiospermic families, 18 families such as

Anacardiaceae, Apiaceae, Apocynaceae, Arecaceae, Asclepiadaceae, Cactaceae, Caricaceae, Clusiaceae, Commelinaceae, Lamiaceae, Liliaceae, Meliaceae, Mimosaceae, Passifloraceae, Pedaliaceae, Rutaceae, Scrophulariaceae and Violaceae have only one genus with solitary species.

The family Cleomaceae and Nyctaginaceae are represented with a single genus having two species and Boraginaceae, Tiliaceae have two genus with two species each family Convolvulaceae have two genus represented with three species, 10 families represented with three or more genera and more than three species each (Acanthaceae, Amaranthaceae, Asteraceae, Cucurbitaceae, Euphorbiaceae, Fabaceae, Malvaceae, Rubiaceae, Solanaceae and Verbenaceae).

Among the 85 medicinal plants identified from the study area leaves of 52 plants used for the preparation of medicine, 16 of the identified plants are used wholly for the preparation of medicine, roots of 17 plants, fruits of 12 plants, seeds of 11 plants, barks of six plants, flowers of four plants are used for the preparation of medicine. Bulb, endosperm, latex and peduncle of each one plant are used for the preparation of medicine. This study observed that leaves are more useful for the preparation of medicine. Rajendran *et al.* (2002) state that young leaves contains more phytohormones and leaves are mostly used to make siddha formulations. Almost all the ethnobotanical studies show that leaves are mostly used in the treatment of diseases (Ganesan *et al.*, 2005 and Ignacimuthu *et al.*, 2008).

## Common Diseases

Twenty five medicinal plants namely, *Anacardium occidentale*, *Andrographis paniculata*, *Boerhavia diffusa*, *B. erecta*, *Calotropis gigantea*, *Centella asiatica*, *Coccinia grandis*, *Crotalaria verrucosa*,

**Table 1 :** List of medicinal plants identified in this study area.

S. no.	Botanical name	Family	Local name	Parts used	Medicinal values
1.	<i>Abutilon indicum</i> (L.) Sweet.	Malvaceae	Thuthi	Leaves	Rheumatic pains and laxative
2.	<i>Acalypha ciliata</i> Forssk.	Euphorbiaceae	Kuppamenich- akalathi	Whole plant	Vermifuge and laxative
3.	<i>Acalypha indica</i> L.	Euphorbiaceae	Kuppaimeni	Leaves	Abscess, scabies, earache and skin diseases.
4.	<i>Achyranthes aspera</i> L.	Amaranthaceae	Naurivi	Leaves, fruit	Dysentery and cough
5.	<i>Aerva lanata</i> (L.) Juss. ex Schult.	Amaranthaceae	Sirukan poolai	Whole plant	Bladder stones
6.	<i>Amaranthus viridis</i> L.	Amaranthaceae	Kuppaikeerai	Roots, leaves	Leucorrhoea and laxative
7.	<i>Anacardium occidentale</i> L.	Anacardiaceae	Kollamaram	Peduncle, bark	Kidney troubles and leprosy
8.	<i>Andrographis paniculata</i> (Burm.f) wall. ex Nees.	Acanthaceae	Nilavembu	Leaves	Jaundice, liver disorders, diarrhoea and cough
9.	<i>Azadirachta indica</i> A. Juss.	Meliaceae	Veppamaram	Bark, leaves	Skin diseases, cooling effect and chicken pox
10.	<i>Boerhavia diffusa</i> L.	Nyctaginaceae	Mukurattai	Whole plant	Kidney disorders
11.	<i>Boerhavia erecta</i> L.	Nyctaginaceae	Sattaraniai	Leaves	Asthma, jaundice, diarrhoea, painful urination, cough and cold
12.	<i>Calophyllum inophyllum</i> L.	Clusiaceae	Punnaimaram	Leaves	Diarrhoea, dysentery, rheumatism, leprosy, scabies, eye pain, sores and cuts.
13.	<i>Calotropis gigantea</i> (L.) R. Br.	Asclepiadaceae	Erukku	Leaves, flowers	Rheumatism, asthma, sore and scabies
14.	<i>Carica papaya</i> L.	Caricaceae	Pappali	Latex, leaves, seed	Bleeding piles, jaundice and ring worm disease
15.	<i>Cassia occidentalis</i> L.	Caesalpiniaceae	Pay-thuvarai	Whole plant	Urinary disorder, fever, dysentery and other stomach problems
16.	<i>Centella asiatica</i> (L.) Urban.	Apiaceae	Vallarai	Whole plant	Hypertension, fever, leprosy, kidney stones, memory loss and asthma
17.	<i>Cleome gynandra</i> L.	Cleomaceae	Tivezhai	Leaves, seed	Earache, cough and tape worm
18.	<i>Cleome viscosa</i> L.	Cleomaceae	Naikaduku	Leaves	Earache
19.	<i>Clerodendrum viscosum</i> Vent.	Verbenaceae	Perukilai	Leaves	Vermifuge, tumors and skin diseases
20.	<i>Coccinia grandis</i> (L.) Voigt.	Cucurbitaceae	Kovai	Leaves, fruits	Mouth ulcer and diabetes
21.	<i>Cocos nucifera</i> L.	Arecaceae	Thennaimaram	Eendosp- erm, leaves	Leucorrhoea, cholera and diarrhoea
22.	<i>Commelina benghalensis</i> L.	Commelinaceae	Kanamvaazhai	Leaves	Piles, urinary diseases, dysentery and fever.
23.	<i>Corchorus aestuans</i> L.	Tiliaceae		Fruit	Headache

Table 1 continued....

**Table 1 continued....**

24.	<i>Cordia gharaf</i> (Forssk.).	Boraginaceae	Naruvilli	Bark	Anthelmintic
25.	<i>Crossandra infundibuliformis</i> (L.) Nees.	Acanthaceae	Kanagambaram	Leaves	Aphrodisiac
26.	<i>Crotalaria laburnifolia</i> L.	Fabaceae	MoovilaiKilukilppai	Leaves	Scorpion sting and snake bite
27.	<i>Crotalaria verrucosa</i> L.	Fabaceae	Chankuniti	Leaves	Dyspepsia, fever, scabies, throat and mouth diseases
28.	<i>Croton bonplandianus</i> Baillon.	Euphorbiaceae	Pomakkai	Whole plant	Breathing troubles, skin diseases, cuts and wounds
29.	<i>Cucumis sativus</i> L.	Cucurbitaceae	Vellarikai	Fruits, seeds	Fever, bronchitis and constipation
30.	<i>Cucurbita pepo</i> L.	Cucurbitaceae	Poosanikai	Fruit, seed	Tape worm
31.	<i>Datura innoxia</i> Miller.	Solanaceae	Vishaummatai	Leaves, seeds	Rheumatic pain and rabies
32.	<i>Digera muricata</i> (L.) Mart.	Amaranthaceae	Thoyyakeerai	Leaves, fruit	Urinary disease
33.	<i>Dolichos trilobus</i> L.	Fabaceae	Minnikizhanku	Seeds	Constipation, skin diseases and rheumatism.
34.	<i>Eclipta prostrata</i> (L.) L.	Asteraceae	Karisalai	Leaves	Jaundice, headache and body pain
35.	<i>Euphorbia hirta</i> L.	Euphorbiaceae	Amaman Pachaiarisi	Whole plant	Diarrhoea, gonorrhoea and venereal disease
36.	<i>Euphorbia tirucalli</i> L.	Euphorbiaceae	Tirucalli	Stem, root	Gastric problems, toothache, jaundice, rheumatic pains, cough and cold
37.	<i>Grewia tiliaefolia</i> Vahl.	Tiliaceae	Unnu	Stem	Chronic dysentery and swelling
38.	<i>Heliotropium indicum</i> L.	Boraginaceae	Thelkoduku	Leaves, seed	Ring worm diseases, eye disorders, fever and stomach problems
39.	<i>Hibiscus aculeatus</i> Roxb.	Malvaceae	Kaattuppulichi	Root, leaves	Worms, poisonous insects, swelling and kidney troubles
40.	<i>Hibiscus cannabinus</i> L.	Malvaceae	Pulichikeerai	Whole plant	Stomachache
41.	<i>Hybanthus enneaspermus</i> (L) F. Muell.	Violaceae	Orithalthamarai	Leaves, fruit, root	Stomach troubles, ulcer, gonorrhoea and urinary tract infections.
42.	<i>Indoneesiella echioides</i> (L.) Sreem.	Acanthaceae	Gopuramthangi	Whole plant	Fever and ulcer
43.	<i>Ipomoea alba</i> L.	Convolvulaceae	Naganamukkora	Bark	Purgative
44.	<i>Ipomoea pes-caprae</i> (L.) R. Br.	Convolvulaceae	Attukkal	Leaves, root	Gonorrhoea, rheumatism, skin diseases, wounds, ulcers, vomiting and dyspepsia
45.	<i>Jatropha curcas</i> L.	Euphorbiaceae	Kaataamanakku	Leaves, seed	Rheumatism, anaemia, gonorrhoea and stomach ache
46.	<i>Justicia tranquebariensis</i> L. f.	Acanthaceae	Thrasumurungai	Leaves	Cough and small pox
47.	<i>Lantana camara</i> L.	Verbenaceae	Poochedi	Leaves	Rheumatic pain, diarrhoea and dysentery.
48.	<i>Leucus aspera</i> (Wild.) Link.	Lamiaceae	Thumbai	Leaves	Headache, skin diseases, scorpion sting and jaundice
49.	<i>Merremia tridentata</i> (L.) Hallier f.	Convolvulaceae	Mudiyarkoonthal	Whole plant	Leprosy

*Table 1 continued....*

Table 1 continued....

50.	<i>Mimosa pudica</i> L.	Mimosaceae	Tottalvaadi	Leaves	Sores, piles, swelling, cuts and wounds
51.	<i>Morinda citrifolia</i> L.	Rubiaceae	Manjanathi	Root, leaves	Dysentery, leucorrhoea, hypertension, wounds and ulcers,
52.	<i>Mukia maderaspatana</i> (L.) M. Roem.	Cucurbitaceae	Musumusukai	Root, fruit, seed	Fever, tooth ache and piles.
53.	<i>Murraya koenigii</i> (L.) Spreng.	Rutaceae	Kariveppilai	Leaves	Dysentery, ulcer, cough and cold
54.	<i>Nicandra physalodes</i> (L.) Gaertn.	Solanaceae		Whole plant	Anthelmintic
55.	<i>Oldenlandia umbellata</i> L.	Rubiaceae	Chiruver	Leaves	Asthma and bronchitis
56.	<i>Opuntia dillenii</i> (Ker-Gawl)	Cactaceae	Sappathikallai	Whole plant	Whooping cough and swellings
57.	<i>Passiflora foetida</i> L.	Passifloraceae	Siruppunaikkali	Leaves	Asthma
58.	<i>Pavetta indica</i> L.	Rubiaceae	Pavettai	Leaves, flower	Urinary disorder, jaundice, dropsy and diarrhoea
59.	<i>Pedaliium murex</i> L.	Pedaliaceae	Anainerinjil	Whole plant	Scorpion bite and rheumatic pain
60.	<i>Phyllanthus amarus</i> Schumach. Thonn.	Euphorbiaceae	Keezhanelli	Whole plant	Diabetes, jaundice, anaemia and wound
61.	<i>Phyllanthus emblica</i> L.	Euphorbiaceae	Nelli	Root, bark, Leaves	Gonorrhoea, jaundice, diarrhoea, diabetes, cough and asthma
62.	<i>Phyllanthus reticulatus</i> Poir.	Euphorbiaceae	Pullthi	Leaves	Headache
63.	<i>Phyllanthus urinaria</i> L.	Euphorbiaceae	SivappuKeezhanelli	Whole plant	Jaundice and obesity
64.	<i>Physalis minima</i> L.	Solanaceae	Sodakkuthakkali	Whole plant	Antifertility, diabetes and swelling spleen disorders
65.	<i>Scilla hyacinthina</i> (Roth) J.F. Macbr.	Liliaceae	Narivengayam	Bulb	Anthelmintic and leprosy
66.	<i>Scoparia dulcis</i> L.	Scrophulariaceae	Kaattukothamalli	Leaves, seed	Fever, cough, bronchitis, tooth ache and kidney stones
67.	<i>Sebastiania chamaelea</i> (L.) Mull. Arg.	Euphorbiaceae	Pullaamanakku	Leaves	Diarrhoea
68.	<i>Sida acuta</i> Burm f.	Malvaceae	Arivalmanai-poondu	Root, leaves	Nervous disorder, swellings, fever and leucorrhoea.
69.	<i>Sida rhombifolia</i> L.	Malvaceae	Kurunthotti	Roots, leaves	Nervous disorder and swellings
70.	<i>Solanum indicum</i> L.	Solanaceae	Karimulli	Roots, fruits	Asthma, colic, fever and headache
71.	<i>Solanum nigrum</i> L.	Solanaceae	Manathakkali	Leaves, root	Stomach problems, fever, urinary disorders, jaundice and rabies
72.	<i>Solanum surattense</i> Burm. f.	Solanaceae	Kandankathari	Leaves, fruit	Asthma, bronchial disorder and fever
73.	<i>Spermacoce hispida</i> L.	Rubiaceae	Nattaichuri	Leaf, Root	Bladder stones, diarrhoea, headache, cuts and wounds.

Table 1 continued....

Table 1 continued....

74.	<i>Stachytarpheta indica</i> (L.) Vahl.	Verbenaceae	Simainayuruvi	Whole plant	Ulcer, dropsy, cardiac problems, venereal diseases and intestinal worms
75.	<i>Synedrella nodiflora</i> (L.) Gaertn.	Asteraceae		Leaves	Rheumatism and laxative
76.	<i>Tamarindus indica</i> L.	Caesalpiniaceae	Puli	Flower, leaves	Wound and body pain
77.	<i>Tephrosia purpurea</i> (L.) Pers.	Fabaceae	Kolingi	Roots, bark	Fever, cough and blood disease
78.	<i>Tephrosia villosa</i> (L.) pers.	Fabaceae	Kollukkaivelai	Leaves	Dropsy
79.	<i>Thespesia populnea</i> (L.) Sol. ex Correa.	Malvaceae	Poovarasam	Leaves	Skin diseases, dysentery and ring worm diseases
80.	<i>Tridax procumbens</i> L.	Asteraceae	Vettukayap-oondu	Leaves	Headache, cuts and wounds
81.	<i>Urena lobata</i> L.	Malvaceae	Ottatti	Seed	Rheumatism and colic
82.	<i>Vernonia cinerea</i> (L.) Less.	Asteraceae	Segadevi	Leaves	Dysentery, bronchial disorders, cuts and wounds
83.	<i>Vigna unguiculata</i> (L.) Walp.	Fabaceae	Karaman	Seeds, leaves	Scanty urination, nausea and vomiting
84.	<i>Vinca rosea</i> L.	Apocyanaceae	Sudukaattu-malligai	Leaves	Diabetes, scorpion sting, scabies and leukemia
85.	<i>Wedelia chinensis</i> (Osbeck.) Merr.	Asteraceae	Manjalkarisalan-kanni	Leaves	Jaundice, skin diseases, liver disorder, piles and swelling

*Clerodendrum viscosum*, *Cassia occidentalis*, *Cocos nucifera*, *Digera muricata*, *Hibiscus aculeatus*, *Hybanthus enneaspermus*, *Scoparia dulcis*, *Mukia madraspatana*, *Phyllanthus amarus*, *P. emblica*, *Physalis minima*, *Vinca rosea*, *Wedelia chinensis*, *Pavetta indica*, *Passiflora foetida*, *Oldenlandia umbellata*, *Spermacoce hispida* are used to cure the common diseases like cough, inflammation, stomach disorders, fever, headache, jaundice and skin diseases. According to Bhattacharyya (2002), *Azadirachta indica* (Family : Meliaceae) used for a treatment of pox and skin diseases. Lohidas et al. (2014) reported that the leaves of *Azadirachta indica* is grind using cow milk and the paste is applied for eczema continuously for forty days.

#### Viral diseases

Among 85 medicinal plants collected from the study area, 15 plants such as *Azadirachta indica*, *Andrographis paniculata*, *Boerhavia erecta*, *Carica papaya*, *Eclipta prostrata*, *Euphorbia tirucalli*, *Leucas aspera*, *Pavetta indica*, *Phyllanthus amarus*, *P. emblica*, *P. urinaria*, *Wedelia chinensis*, *Datura innoxia*, *Solanum nigrum* and *Justicia transquebariensis* are used to cure viral diseases such as chicken pox, jaundices, rabies and small pox. Pooja Juyal and Ghildiyal (2013) states that *Carica papaya*

(Family : Caricaceae) given for a treatment to jaundice. Mishra et al. (2013) states that *Phyllanthus emblica* (Family : Euphorbiaceae) given for a treatment to Hepatitis B.

#### Bacterial diseases

Bacterial diseases such as cholera, leprosy, gonorrhoea, venereal diseases and whooping cough were cured by using 13 medicinal plants such as *Anacardium occidentale*, *Cocos nucifera*, *Centella asiatica*, *Euphorbia hirta*, *Hybanthus enneaspermus*, *Ipomea pes-caprae*, *Jatropha curcas*, *Phyllanthus emblica*, *Callophyllum inophyllum*, *Merremia tridentata*, *Scilla hyacinthina*, *Stachytarpheta indica* and *Opuntia dillenii* are collected from the study area. Kingston et al. (2009) states that *Anacardium occidentale* (Family : Anacardiaceae) powdered bark mixed with honey is taken orally once in a day continuously for six months to cure leprosy. Sharma (2014) reports that *Centella asiatica* (Family : Apiaceae) used treat memory loss.

#### Anti-poisonous plants

Among 85 plants studied, 7 plants namely *Crotalaria laburnifolia*, *Hibiscus aculeatus*, *Hybanthus enneaspermus*, *Leucas aspera*, *Pedaliium murex*, *Tephrosia purpurea* and *Vinca rosea* are used as antipoisonous, which are used to treat venomous bites.

Leaves of *Crotalaria laburnifolia* and *Pedalium murex* are used to treat scorpion bite. Bark of *Tephrosia purpurea*, leaves of *Vinca rosea*, roots and leaves of *Hibiscus aculeatus* are used as antidote for poisonous insects. Our results coincide with earlier report of Muralidhara Rav and Pullaiah (2001). *Leucas aspera* leaves juice is given for snake bite at an interval of every one hour by Kanikkars of Kanyakumari district (Brisca Renuga and Mary Mettilda Bai, 2013).

### Threatened species (*Calophyllum inophyllum*)

A threatened medicinal plant *Calophyllum inophyllum* was collected from the study area. Threatened species *C. inophyllum* is known to have cancer chemoprotective effects and shows strong activity against Human Immune Deficiency Virus type-I (HIV-I). Daniels *et al.* (1995) possesses potential threat due to decline in the population because of various biotic and abiotic factors being a littoral species. Thengane *et al.* (2006) states that, seeds of *Calophyllum inophyllum* are taken away in the tidal water thereby limiting the propagation rate.

### Conclusion

The present study is mainly focused on the present status of AVM canal and provides the botanical name, habit, local name, useful parts used and their medicinal values of the collected medicinal plants from Neerodi to Thadeaupuram (present study area) of AVM canal bank in Kollencode revenue village segment. A large number of people in the developed and developing countries using plant remedies for various ailments due to the modern medicines with danger of over medication and many sides effects. The increasing cost of sophisticated medical care is another factor. The health assembly of the WHO passed a number of resolutions in response to the resurgence of interest in the study and use of traditional medicines in health care and in recognition of the importance of medicinal plants to the health system of many developing countries. As a follow-up-action, the health authorities and administrators in developing countries decided to take traditional form of medicine more seriously and explore the possibility of utilizing them in primary health care. As human activities keep escalating with ever increasing population, ecosystem in near human settlement is made fragile. Hence documenting medicinal flora in the study area is need for conservation in the natural habitat.

### References

Ambasht, R. S. (1968). *Ecology of River Bank*. Proc. Symp. Rec, Adv. Trop. Ecol. Varanasi: 455-470.

- Auti, B. K. and P. E. Jagdale (2008). Medico-botanical Studies on Some Angiosperms from Eastern Part of Mulla Dam, Ahmednagar District, Maharashtra State. *Ad. Plant. Sci.*, **21(II)** : 603-605.
- Bhattacharyya, G. (2002). Ethnobotanical Studies on Some Weeds of Gujarat, India. *In: Resent Progress in Medicinal Plants (Volume 1, Ethnomedicine and pharmacognosy)*, Singh, V. K Covil, J. N and G (eds). SCI Tech Publishing LLC, USA, pp. 33-40.
- Felix, R. and G. S. Regini Balasingh (2007). Studies on the Riparian Vegetation of the River Thambraparani, Kanyakumari District. *Scott Res Forum*, p. 154-161.
- Gamble, J. S. and C. E. C. Fischer (1957). *Flora of the Presidency of Madras*. Vols I-III (Adlard & Sons Ltd., London), 1915-1936, reprinted edn. (Botanical Survey of India, Calcutta), 1957.
- Ganesan, S., N. Suresh and L. Kesavan (2005). Ethnomedicinal Survey of Lower Palni Hills of Tamil Nadu. *Indian J. Trad. Knowled*, **3** : 299-304.
- Ignacimuthu, S., M. Ayyanar and K. Sankarasivaraman (2008). Ethnobotanical Study of Medicinal Plants Used by Paliyar Tribals in Theni District of Tamil Nadu, India. *Fitoterapia*, **79** : 562-568.
- Jain, S. K. (1991). *Dictionary of Indian Folk Medicine and Ethnobotany*. Deep Publication, New Delhi.
- Juyal, Pooja and J. C. Ghildiyal (2013). Medicinal Phyto-diversity of Bhabar Tract of Garhwal Himalaya. *J. of Medicinal Plants Studies*, **1/6** : 43-57.
- Kingston, C., S. Jeeva, G. M. Jeeva, S. Kiruba, B. P. Mishra and D. Kannan (2009). Indigenous Knowledge of Using Medicinal Plants in Treating Skin Diseases in Kanyakumari District, Southern India. *Indian Journal of Traditional Knowledge*, **8** : 196-200.
- Lohidas, J., V. B. Rathi Pappa and N. Simi (2014). Role of Holy Plants in Health Care System of the People in Kanyakumari District, Tamil Nadu, India. *Plant Archives*, **14(1)** : 81-86.
- Matthew, K. M. (1991). *An Excursion Flora of Central Tamil Nadu, India*. Oxford and IBH Pub. Company. Pvt. Ltd., New Delhi.
- Misra, R. (1944). The Vegetation of Raighat Ravines. *J. Indian Bot. Soc.*, **23** : 113-121.
- Mishra, K. P., Navita Sharma, Drishya Diwaker, Lilly Ganju and S. B. Singh (2013). Plant Derived Antivirals : A Potential Source of Drug Development. *J. of Virology and Antiviral Research*.
- Muralidhara, Rao D. and T. Pullaiah (2001). *Ethnobotany*, **13** : 40-44.
- Nayar, T. S. A., Rasiya Beagam, N. Mohan, G. Rajkumar and M. Sibi (2006). *Fowering Plants of Kerala – A hand book*. TBGRI Palode Trivandrum, P. 1079.
- Ranjit, D. J. Daniels and V. Patil (1995). Value Addition : A Threat to *Calophyllum* Species. *Curr. Sci.*, **68** : 243-244.

- Rajendran, S. M, K. Chandrasekar and V. Sundaresan (2002). Ethnomedicinal Lore of Valaya Tribe in Seithur Hills of Viruthunagar District, Tamil Nadu, India. *Indian J. Trad. Knowled*, **1** : 59-71.
- Renuga, F. Brisca and S. Mary Metilda Bai (2013). Natural Products Used by the Kanikkars of Kanyakumari District, Tamil Nadu, India. *J. of Pharmacognosy and Phytochemistry*, **2(1)** : 255-261.
- Saxena, H. O. (1986). Observations on the Ethnobotany of M.P. *Bull. Bot. Surv. India*, **28** : 149-156.
- Sharma, Vivek, Bikram Singh, Raghbir C. Gupta and Harcharan S. Dhaliwal (2014). Comprehensive Ethno-botanical Survey and Cytomorphological Status of Some Important Medicinal Plants from Himachal Pradesh : A North Indian State, **3/10** : 681-711.
- Thengane, S. R., S. V. Bhosle, S. R. Deodhar, K. D. Pawar and D. K. Kulkarni (2006a). Micro Propagation of Indian Laurel (*Calophyllum inophyllum*) : A Source of Anti-HIV Compounds. *Curr. Sci.*, **90** : 1393-1397.
- Yoganarashiman, S. N. and V. Chelladurai (2000). Medicinal Plants of India, Tamil Nadu. Vol. **2** RRI (AY). Bangalore, India. 715.