Indian Journal of Traditional Knowledge
Vol. 9 (2), April 2010, pp. 294-299

# Medicinal plants of sacred groves in Kanyakumari district Southern Western Ghats

S Sukumaran[1]* & A D S Raj[2]

[1]Department of Botany, Nesamony Memorial Christian College, Marthandam 629 165, Kanyakumari district, Tamil Nadu

[2]Department of Botany and Research Centre, Scott Christian College, Nagercoil 629 003, Tamil Nadu

E-mail: sukumaranbotanist@gmail.com

*Received 5 December 2007; revised 16 July 2009*

An attempt has been made to identify folklore medicinally important plants frequently used by rural communities of sacred groves and it environs of Kanyakumari district, Tamil Nadu. A total of 34 medicinal plants from 33 genera under 29 families were enumerated. Most of the plants are used for curing earache, skin diseases, fever, cold, headache, cough, urinary disorder, ulcer, etc. Of 29 families, 26 families were nonspecific. Plants of Rutaceae was largely represented (4 species), followed by Euphorbiaceae and Sapindaceae.

**Keywords:** Ethnomedicine, Biodiversity, Folk medicine, Indigenous knowledge, Kanyakumari, Medicinal plants, Sacred groves, Western Ghats

**IPC Int. Cl.[7]:** A61K35/78, A61P1/02, A61P1/04, A61P1/10, A61P1/14, A61P1/16, A61P9/14, A61P11/00, A61P15/00, A61P31/00, A61P39/02

In recent years, there has been an increasing awareness that the significance of medical plant studies goes beyond mere anthropological curiosity. In Africa 80% of the population depend principally on herbal medicine; this situation is likely to continue[1]. In addition many modern drugs derived from plant products have chemical simulations. The study of indigenous herbal medicine can, therefore, serve to validate and enhance existing local uses, and to provide clues to remedies having worldwide potential[2]. Many traditional societies have accumulated a whole lot of empirical knowledge on the basis of their experience dealing with nature and natural resources[3]. The traditional wisdom is based on the intrinsic realization that man and nature form part of an indivisible partner, and therefore should live in partnership with each other[4]. It is also observed that more than 35,000 plant species are being used around the world for medicinal purposes[5]. More than 8,000 plants are used in our country especially for their medicinal values by the rural people[6]. Around 25,000 formulations in modern allopathic system of medicine are derived from those plant species which are being used as folk medicines throughout the world since ages. Only 15% of pharmaceutical drugs are consumed in developing countries, and relatively more affluent people take a large proportion of it[7]. It is due to extinction less availability of some of the rare plant species and partly due to poor recognition of the traditional knowledge. It is need of the hour to collect, update and document this scattered knowledge of folklore medicine.

Kanyakumari district is rich in rural population, the indigenous communities of the district have an age old tradition of preserving small patches of old growth forests as a part of their culture and religious beliefs. These forests are popularly known as sacred groves, *Iyarkaikovilkal* or *Kaavu* (Tamil) are rich in biodiversity communities[8]. They are the refugia for many medicinal, rare, endemic, threatened, timber and fuel wood yielding plants[9-10]. These species were observed to be rich in the production of wild tubers, fruits and medicines. About 60% plants present in these groves are medicinal, of which 18% serve as folk medicines. These sacred groves can serve as the conservation pockets of local biodiversity, medicinally and economically important plants in future also[11-12]. In the recent past, partly because of

*Corresponding author

depletion of sacred grove resources and partly as a consequence of human developmental activities, the usage of wild resources of ethnobotanical value has been declining. Ethnobotanically, the area remains unexplored and no comprehensive account of local tradition is available. The earlier studies on medicinal plants of the area were fragmentary with limited objectives[13-16,37-40]. In view of this fact, the work was carried out to provide a comprehensive account of folklore medicinal plants of sacred groves in Kanyakumari district of Tamil Nadu. During the study, an extensive field survey of the medicinal plants was done and the species used as folklore medicines were enumerated.

## Methodology

The study was undertaken in sacred groves of Kanyakumari district (77° 15' – 77° 30E and 8° 30' – 8° 15'N). The study area, a part of Western Ghats covers 1,684 km$^2$ and is inhabited by 11,37,181 people (Fig. 1). The rain fall varies from 103-310 cm and altitude is about 1,829 m asl[17]. Most of the district is composed of gneissic rocks[18]. Fourteen types of forests in this district, because of diverse locality factors harbour plenty of medicinally important plants[19]. Topographically, the district may be broadly classified as coastal, middle, and mountainous regions[20-21]. The floristic vegetation of the sacred groves stand as a typical evergreen forest with local variations[11]. It comprises of trees, shrubs, climbers, herbs, epiphytes and parasites. Apart from these, many species of algae, fungi, lichens, bryophytes, pteridophytes and gymnosperms were also recorded[8].

The folklore medicinal plants enumerated, and the information about their uses, were collected during the field trips to various sacred groves of Kanyakumari district during 1998-2001. Local inhabitants were consulted to find out the uses to these plants. Information regarding medical aspect was gathered from persons having familiarity and knowledge with herbal medicines, e.g. vendors of drug plants. The medicinal property of each species was accepted as valid if at least 5 separate informants had a similar opinion. Routine herbarium methods were followed in pre-serving in the plant speciments[22-23]. The medicinal use of species was cross checked through the literature available. Plant specimens were identified with the regional and local floras[24-25]. Voucher specimens were prepared and are housed in the Botany Department, Scott Christian College, Nagercoil, Kanyakumari district, Tamil Nadu.

## Results and discussion

During the study, out of the 201 sacred groves distributed in 4 different *taluks*, 329 plant species from 251 genera belong to 110 families were enumerated. Thirty four plants belonging to 29 families under 33 genera are traditional folklore medicinal species. Plants are enumerated with botanical names, local names (*Tamil*), family, and use of different plant part in various ailments (Table 1). Rutaceae was the dominant family with 4 species, followed by Euphorbiaceae and Sapindaceae (2 species each), 26 families represented by single species. The most common (reportedly effective) method of preparing medicines is decoction followed by paste and juice. It was also recorded that some plants used as a medicine in this region are not used

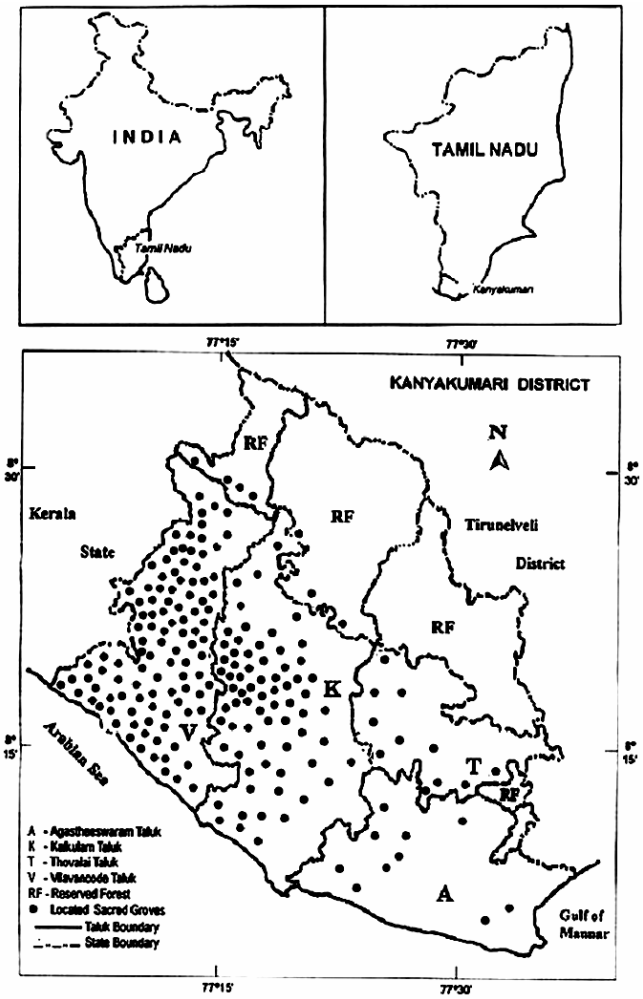


Fig. 1—Location map of study area

Table 1—Folklore medicinal uses of plants

| Plant name/Local name | Family | Uses |
|---|---|---|
| *Acacia sinuata* (Lour.) Merr. (*Sigakai*) | Mimosaceae | Seed powder is used as alternative of soaps, skin diseases. |
| *Acalypha indica* Linn. (*Kuppaimeni*) | Euphorbiaceae | Leaf decoction with garlic is used as anthelmentic. Leaf powder is used for bed sores; leaf juice is useful in mental for emetic. Whole plant decoction is used to cure earache & skin diseases. |
| *Aegle marmelos* (Linn.) Correa. (*Vilvam/Villagam*) | Rutaceae | Root, stem and bark decoction is used for intermittent fever, diarrhoea and gastric troubles; leaf poultice is used to cure optalmia; roasted tender leaves are used in venereal diseases. Unripe dried fruits are taken for diarrhoea & dysentery. |
| *Ailanthus excelsa* Roxb. (*Perumaram*) | Simaroubaceae | Leaf juice mixed with *Justicia* sp juice is given for diabetes. Whole plant is used as vegetable. Dried corm powder is given for menstrual disorders, liver diseases & asthma. |
| *Amaranthus caudatus* Linn. (*Cherukeerai/ Thandukeerai*) | Amaranthaceae | Whole plant is eaten as vegetable to purify blood and cure piles. |
| *Amorphophallus sylvaticus* (Roxb.) Kunth. (*Kattuchenai*) | Araceae | Dried corm powder is given for menstrual disorders, liver diseases & asthma. |
| *Anisomeles malabarica* (Linn.) R.Br.(*Peyameratti*) | Lamiaceae | Leaf juice is useful in cough, cold and fever. Infusion of whole plant is applied for bowels complaints and intermittent fever. |
| A*rtocarpus lacucha* Roxb. ex Buch (*Chemaipala*) | Moraceae | Bark juice is used as astringent and generative for burning skin. |
| *Asteriastigma macrocarpa* Bedd. (*Aailiyam*) | Flacourtiaceae | Tender leaves paste with butter milk is used to cure hair diseases. |
| *Atalantia monophylla* (Roxb.) DC. (*Kattu elumichai*) | Rutaceae | Fruit is used for pickles. Oil from berries is used to cure chronic rheumatism and paralysis. |
| *Atalantia racemosa* Wt. & Arn. (*Kattu naragam*) | Rutaceae | Leaf decoction is externally applied on itching skin. Oil from fruits is used to cure paralysis & chronic rheumatism. |
| *Cardiospermum halicacabum* Linn. (*Mudacottam*) | Sapindaceae | Whole plant decoction is given orally for treating stomachache in pregnant women. |
| *Centella asiatica* (Linn). Urban (*Vallarai*) | Apiaceae | Whole plant paste mixed with milk is used for fever; to enhance memory power and as an excellent remedy for ulcer. |
| *Cissus quadrangularis* Linn. (*Perandai*) | Vitaceae | Whole plant paste mixed with water is given orally as body enhancer. Whole plant juice is given for piles, worms and ear diseases. |
| *Cleome viscosa* Linn. (*Naikadugu*) | Cleomaceae | Leaf juice is used in earache & eye troubles. Seed paste made by using vinegar and lime juice or hot water is a remedy for skin diseases. |
| *Cleome gynandra* Linn. | Cleomaceae | Leaf juice is used to cure earache. |
| *Commelina benghalensis* Linn. (*Aaduthinnathali*) | Commelinaceae | Whole plant extract is used as laxative and to cure burns, boils & itches. Plant paste is used in septic wounds in the breast. |
| *Cordia obliqua* Willd. var, tomentosa (Wall.) Kaz. (*Viriyampazham*) | Cordiaceae | Powdered kernels are used as a remedy for ring warm. Infusion of bark is used as astringent. |
| *Crataeva magna* (Lour). DC. (*Maralingam*) | Capparaceae | Leaf juice is used for rheumatism. Bark decoction with whole plant of *Boerhavia diffusa* is given orally during inflammation. Bark and roots are used for urinary disorder, fever, vomiting & gastric irritation. |
| *Cynodon dactylon* (Linn.) Pers (*Arugampullu*) | Poaceae | Whole plant extract is taken as astringent in chronic dysentery. Plant infusion is used to cure bleeding piles and irritation of urinary organs. |
| *Dodonaea viscosa* (Linn.) Jacq. (*Virali*) | Sapindaceae | Bark is used as astringent and leaf paste is used for healing wounds. |
| *Euphorbia hirta* Linn. (*Ammanpachaiarisi*) | Euphorbiaceae | Plant decoction is taken in bronchial affection & asthma. Whole plant is used in bowel complaints & cough in children. |

*Contd—*

Table 1—Folklore medicinal uses of plants—*Contd*

| Plant name/Local name | Family | Uses |
|---|---|---|
| *Guazuma ulmifolia* Lam. (Tnbachai) | Sterculiaceae | Whole plant is used for liquor preparation and used for nervous disorders. |
| *Melia dubia* Cav. (*Malayvembu*) | Meliaceae | Paste of berries is applied for leprosy. |
| *Mesua ferrea* Linn. sub. sp. pulchella (Planch. & Triana) Vesque var. *coromandeliana* (Wt.) Mah. (*Nangu*) | Clusiaceae | Oil from seeds is used to cure continuous affection of sores and rheumatism. Decoction of dried flower is taken orally to get relief from stomachache. |
| *Michelia champaca* Linn. (*Chemabagam*) | Magnoliaceae | Flower oil is used to cure rheumatism, ophthalmia and headache. Oil from seeds rubbed over the stomach relieves flatulence. Bark decoction is used for menstrual disorders. Dried root & bark mixed with curd milk, is used in abscesses. Flowers infusion is given orally for gonorrhoea. |
| *Murraya koenigii* (Linn.) Spreng. (*Kariveppilai*) | Rutaceae | Fresh leaf juice with lime juice and sugar is used in morning sickness. Leaf paste mixed with butter milk is given orally as remedy to stomach upsets. Fruit juice mixed with equal amount of lime juice is applied externally for insect bites. Leaf paste is applied externally during dog bite. |
| *Pandanus fascicularis* Lam. (*Thalaimaram*) | Pandanaceae | Oil from floral bracts is used to relief earache. |
| *Punica granatum* Linn. (*Madhulai*) | Punicaceae | Plant extract added with sugar is given orally in diarrhoea. |
| *Sapindus emarginatus* vhal (*Manipugu*) | Sapindaceae | Root paste with vinegar is applied externally for snakebite. |
| *Solanum trilobatum* Linn. (*Tudhuvalai*) | Solanaceae | Plant decoction is given orally for treating chronic bronchitis. |
| *Sterculia urens* Roxb. (*Vellaipputali*) | Sterculiaceae | Gum mixed with honey is useful for throat problems. Leaf decoction is given for pluropneumonia in cattle. |
| *Tabernaemontana heyneana* Wall. (*Nandiyavattam*) | Apocynaceae | Flower juice mixed with coconut oil is given during burning sensation of sore eye. Chewed roots relieve toothache. |
| *Terminalia catappa* Linn. (*Vadham*) | Combretaceae | Young leaf extract is used as ointment for leprosy, scabies and other skin diseases. Bark is useful as astringent, diuretic & potent cardio tonic. |

elsewhere in the country. On the other hand, some well known species like *Cleome viscosa* Linn., *Centella asiatica* (Linn.) Urbo., *Melia dubia* Cav. *Cynodon dactyton* (Linn.) Pers., *Acalypha indica* Linn., *Aegle mrmelos* (Linn.) Corr. and *Gauzuma ulmifolia* Lam. Are rarely used in Kanyakumari district in contrast with their common use in other parts of the country including other countries may be due to lack of exchange of knowledge[26-30].

Most of the medicinal plants are growing in wild condition. Some rare, endemic and threatened species *like Atalantia monophylla* (Linn.) Corr., *Atlantia racemosa* Wight & Arn. and *Mesua ferrea* Linn. are in very restricted distribution, it is not seen in the vicinity[9]. *Commelina benghalensis* Linn., *Euphorbia hirta* Linn. and *Sterculia urens* Roxb, are traditionally used for bowel complaints. A Septic wound healing has a similar purpose in Vindhyan region, Uttar Pradesh[3]. The therapeutic use of *Anisomeles malabarica* R. Br., *Cardiospermum helicacabum* Linn., and *Cissus quardrangularis* Linn. reported from this district resemble previous reports[16,31-32]. The curative properties of some species like *Aegle marmelos* (Linn.) Corr., *Ailanthus excelsa* Roxb., *Michelia champaca* Linn., *Solanmum trilobatum* Linn., *Tabernaemontana heyneana* Wall., *Mesua ferra* Linn., and *Terminalia catappa* Linn. are used to heal venereal diseases, diabetes, gonorrhoea, chronic bronchitis, sensation of sore eye, rheumatism and cardiotonic ailments, respectively, and are new information from the study area. One important source of locating potential bioresources is indigenous knowledge of the folk[26]. The inventory findings reinforce that indigenous knowledge is dynamic and botanical knowledge diminishing[33-36]. However, people of the modern generation learn from their ancestors on the basis of keen observation only. The people have been using plant remedies against various ailments from time immemorial without knowing their effective constituents.

The study revealed that pharmacologists, pharmacognosists, and phytochemists have screened only a few plants for their active principles. Clinical investigations take a long time and are highly expensive to analyse large numbers of plants. Hence, traditional folklore medicinal knowledge is the best source of information for preliminary screening in such instances. Even though their medicinal value

and economic importance are elaborated, it is important to go for in-depth investigations particularly experimental and clinical studies for findings uses for future generations. Conservation of medicinal plant diversity of these groves is therefore most important for the management and sustainable development in maintaining the fragile ecological processes and life-support system.

**Acknowledgement**

Authors are grateful to the ethnic informants without whose active co-operation the work could not be accomplished. Authors are also thankful to Prof D Christian Babu, HoD of Botany, Nesamony Memorial Christian College, Marthandam and Mrs M Helan Christy Bai for their suggestions and encouragements.

**References**

1 Bickmann W, Traditional medicine and healthcare in Africa, *Dev Corp*, 3 (1984) 9-11.

2 Joshi A R & Edington J M, The use of medicinal plants by two village communities in the central development region of Nepal, *Eco Bot*, 44 (1990) 71-83.

3 Pandey R S & Kumar A, An ethnobotanical study in the Vindhyan region, Uttar Pradesh, *Indian For*, 29 (3) (2006) 389-394.

4 Ramakrishnan P S, What is traditional ecological knowledge (TEK)? In: *Traditional ecological knowledge for managing Biosphere Reserve in South and Central Asia*, edited by Ramakrishnan P S, Rai R K, Katwal R P S & Mahandiratta, (Oxford & IBH Publishing Co Pvt Ltd, New Delhi), 2002.

5 Van Seters A P, *Non-wood Forest Products*, (FAO), 1997, 116.

6 Tiwari D N, Report of the task force on conservation and sustainable uses of medicinal plants, (Bull Planning Commission, Govt of India, New Delhi), 2000.

7 Toledo V M, New paradigms for a new ethnobotany reflections on the case of Mexico, In: *Ethnobotany: Evolution of a discipline*, edited by Schultes RE & Von Resi S, (Chapman and Hall, London), 1995, 75-88.

8 Sukumaran S, *Studies on the Sacred groves of Kanyakumari district and their values in rural life*, PhD Dissertation, (Manonmaniam Sundaranar University, Tirunelveli, Tamil Nadu), 2002.

9 Sukumaran S & Raj A D S, Rare, endemic, threatened (RET) trees and lianas in the sacred groves of Kanyakumari district, *Indian For*, 133 (9) (2007) 1254-1266.

10 Sukumaran S, Jeeva S, Raj A D S & Laloo R C, Rediscovery of *Tectaria zeilanica* (Tectarioideae)–A rare fern from Vilavancode sacred grove, Southern Western Ghats, India, *Indian For*, 30 (3) (2007) 331-332.

11 Sukumaran S, Regini Balasingh G H, Kavitha A & Raj A D S, The floristic composition of sacred groves: a functional tool to analyse the mini-forest ecosystem, *Indian For*, 131 (6) (2005) 773-785.

12 Sukumaran S, Raj A D S, Irudayaraj V & Paulraj K, Enumeration of pteridophytes in the sacred groves of Kanyakumari district-South India, *Indian Fern J*, 23 (2006) 45-51.

13 Lawrance C A, Observation on the Flora of Marunduvamalai, Cape Comorin, *J Bombay Nat His Soc*, 56 (1956) 95-100.

14 Lawrance C A, The Vegetation of Kanyakumari district (Cape Comorin), *J Bombay Nat His Soc*, 57 (1960) 184-195.

15 Prasad P N, Ranjith Singh A J A, Narayanan L M & Natarajan C R, Ethnobotany of Kannikars of South Tamil Nadu, *J Econ Tax Bot*, 12 (1996) 292-296.

16 Rosakutty P J, Stella Roslin A & Ignacimuthu S, Some traditional folklore medicinal plants of Kanyakumari district, *J Econ Tax Bot*, 23 (199) 369-375.

17 Raj A D S, Profile of Kanyakumari District, http:// www.kanyakumari.tn.nic.in/), 2002, 9-10.

18 Foote R B, On the Flora of South Travancore, *Indian For*, 10 (1884) 174-175.

19 Champion H G & Seth S K, *A revised Survey of Forest types of India*, (Manager of Publication New Delhi), 1968.

20 Henry A N & Swaminathan M S, Observation on the vegetation of Kanyakumari district, Tamil Nadu, *Bull Bot Surv India*, 23 (3 & 4) (1981) 135-139.

21 Spillett J J, A report on Wild Life Surveys in South and West India, *J Bombay Nat His Soc*, 65 (1968) 661.

22 Jain S K, Medicinal plant lore of the tribals of Bastar, *Econ Bot*, 19 (1965) 236-250.

23 Jain SK & Rao RR, *A handbook of field and herbarium methods*, (Today and Tomorrow's Printers and Publishers, New Delhi), 1977.

24 Gamble J S & Fischer C E C, *Flora of the Presidency of Madras*, Vol 1-111 (Botanical Survey of India, Calcutta), 1957.

25 Nair N C & Hentry A N, *Flora of Tamil Nadu India*, Vol 1-111 (Botanical Survey of India, Coimbatore), 1983, 1987 & 1989.

26 Jain S K & Sikarwar R L, Prospective under Utilized Bioresources – Clues from indigeneous knowledge in Latin America, *J Indian Boc Soc*, 76 (1997) 253-260.

27 Sharma N K, Shring O P & Tiagi B, Ethonomedicinal plant lore from Mukunda ranges, Jhalawar district, Rajasthan, *J Indian Bot Soc*, 68 (1989) 163-166).

28 Dagar H S, Plant folk medicines among Nicobarese tribals of Car Nicobar Islands India, *Econ Bot*, 43 (2) (1989) 215-224.

29 Joshi A R & Edington J M, The use of medicinal plants of two village communities in the central development region of Nepal, *Econ Bot*, 44 (1) (1988) 71-83

30 Neogi B, Prasad M N V & Rao R R, Ethnobotany of some weeds of Khasi and Garo hills, Meghalaya, Northeastern India, *Econ Bot*, 43 (4) (1989) 471-479.

31 Thomas S J & Britto A J D, Weeds of medicinal importance in Tirunelveli district in Tamil Nadu, *J Econ Tax Bot*, 23 (1999) 363-367.

32 Jeeva G M & Kingston C, Traditional phytotherapy for skin diseases in Kanyakumari district, Tamil Nadu, *J Scott Res Fourm*, 1 (1) (2005) 137-143

33 Posey D A, Indigenous knowledge and development: An ideological bridge to the future, *Cieniae Cultura*, 35 (7) (1983) 887-894.

34 Boom B M, Ethnobotany of the Chacabo Indians, Beni, Bolivia, *Adv Econ Bot*, 4 (1987) 1-68.

35 Lee R A, Balick M J, Link D L, Sohl f, Brosi B J & Raynor W, Cultural dynamism and change – an example from the Federated states of Micronesia, *Econ Bot*, 55 (1) (2001) 9-15

36 Prance G T, What is Ethnobotany today? *J Ethnopharmacol*, 32 (1991) 209-216.

37 Jeeva S, Kiruba S, Mishra B P, Venugopal N, Dhas S S M, Regini G S, Kingston C, Kavitha A, Sukumaran S, Raj A D S & Laloo R C, Weeds of Kanyakumari district and their value in rural life, *Indian J Traditional Knowledge,* 5 (4) (2006), 501-509.

38 Kingston C, Jeeva S, Jeeva G M, Kiruba S, Mishra B P & Kannan D, Indigenous knowledge of using medicinal plants in treating skin diseases in Kanyakumari district, Southern India, *Indian J Traditional Knowledge,* 8 (2) (2009), 196-200

39 Rajendran S M & Agarwal S C, Medicinal plants conservation through sacred forests by ethnic tribals of Virudhunagar district, Tamil Nadu, *Indian J Traditional Knowledge,*6 (2) (2007), 328-333.

40 Ganesan S, Ponnuchamy M, Kesavan L & Selvaraj A, Floristic composition and practices on the selected sacred groves of Pallapatty village (Reserved forest), Tamil Nadu, *Indian J Traditional Knowledge,* 8 (2) (2009) 154-162.