CHAPTER - 6

General survey and collection of medicinal plants
Fig: 6.1 The location of the area where the plant *Lasiosiphon eriocephalus* is collected “Thirthahalli forest area”
Fig: 6.2 Map of India
Fig: 6.3 Map of Karnataka
Fig: 6.4 Map of Shimoga Dist
6.1 Introduction:

Western Ghats are a chain of high lands running the West coast of peninsular India from the river Tapi in the North to Kanyakumari in South. The ghats are characterised with high altitude plateaus. They plateaus are botanically rich and are characterised with high degree of endemism. These are 900 metres above from sea level. These plateaus exhibit several botanical curiosities. They are unique habitats that provide several niches/ micro habitats. Each microhabitat harbours its own characteristic flora, has highly specialised communities. These plateaus are facing pressures from mining activity, tourism etc. The plants growing on plateus are mostly common ephemerals. These botanically and ecologically rich areas have not been studied adequately so far.

Western Ghats of Karnataka is one among the rich bio diversities of the world. It attracts attention from people mainly due to its pleasing climate and wealth of herbal medicines present in the blossom of its forest. Shimoga and Chickmagalur districts form a major part of the Western Ghats that passes through Karnataka. Kuvempu University is one of the youngest, fast growing universities of India. It is situated in the heart of the malnad region i.e. Shimoga district of the Karnataka State. The flora around the University has spurred young researchers into action for finding out new medicinal plants used for treatment of various ailments.

In view of preserving endangered species of flora, many government and non-government organizations have set up medicinal gardens in this area. They are as follows:

a) “Ashwini Aushadhivana” – at Gajanur near Shimoga - Maintained by Department of Forest, Government of Karnataka.

b) “Medicinal Plant Garden” – at Malladihalli (Chitradurga District) – maintained by Private Ayurvedic Hospital at Malladihalli.
c) "Garden of Medicinal Plants" – at Agumbe (Shimoga District), - Maintained by Foundation for Revitalization of Local Health Traditions.

d) "Aushadhi Sasyagala Thota" – at Koppa (Chickmagalure District) – Maintained by Private Ayurvedic College.

Survey of literature revealed that not much work has been done on medicinal plants of Shimoga District. Therefore, there is plenty of scope of research work to be carried out on medicinal and aromatic plants available in this area. Hence, major research programme has been under taken in our laboratory in this regard. In continuation of this research programme, first it was thought to survey some medicinal plants which are available in Thirthahalli taluk of Shimoga District and gather information regarding their medicinal values. A brief account of survey of such medicinal plants is given in following pages.

6.2 : Collection of plants:

Based on the literature survey and discussion with local Aurvedic Pandiths and herbal healers of Shimoga district, a list of twelve plants was prepared. While selecting the plants due care was taken to select only those plants on which there are very less reports or no reports on antimicrobial and other pharmacological activities.

The plants were collected during their flowering seasons from in and around Shimoga district. The figures 6.1 and 6.2 show the maps of India and Karnataka respectively. Figure 6.4 indicates the places from where the twelve plants have been collected.

All the selected twelve plants were authenticated with the assistance of staff members of the Department of Applied Botony, Kuvempu University, Shankaraghatta, Sahyadri Science college, Shimoga and Tunga Mahavidyalaya, Thirthahalli. Herbaria of
these twelve plants has been prepared and maintained in our department. The following is
the list of plants collected.

6.2.1. *Adhatoda vasika*, Nees
6.2.2. *Butea frondosa*, Roxb
6.2.3. *Cinnamomum cassia*, Nees
6.2.4. *Erythrina indica*, Lamk
6.2.5. *Ixora coccinea*, Linn
6.2.6. *Lasiosiphon eriocephalus*, Decne
6.2.7. *Momordica charantia*, Linn
6.2.8. *Sapindous Laurifolia*, Vahl
6.2.9. *Strychnos Nux – vomica*, Linn
6.2.10. *Tectona grandis*, Linn
6.2.11. *Terminalia belerica*, (Gaertn), Roxb
6.2.12. *Vitex negundo*, Linn

In the following pages a brief account about these plants including their medicinal
use has been described.
Adhatoda vasika, Nees.
6.2.1 Botanical Name : *Adhatoda vasika*, Nees.
Family : *Acanthaceae*
Local Name : Kan : *Adusoge*
San : *Vasaka*
Habitat : This plant grows in most part of India, especially in lower Himalayan region.

Parts used : Leaves, roots, flowers and bark

Constituents : This plant mainly contains a bitter nonvolatile alkaloid vasicine, an organic acid adhatodic acid, fat, resin, sugar, gum colouring matter and salts. The leaves are rich in vitamin C and carotene. Leaves also contain quinazoline alkaloids like visicoline, adhatodine, vasicolinone and anisotine.

Properties : The basic vasicine is monobasic and occurs as white needle shaped crystals and has a melting point of 190°C. It is easily soluble in water. Vasicine behaves as a tertiary base.

Action : Expectorant, diuretic, antispasmodic and alternative. Vasicine has no effect on the alimentary canal or on the blood circulation. The expectorant action of the drug is due to the presence of essential oil in the leaves.

Uses of the Plant Parts :

Leaves : The decoction of the leaves and root with pepper is an excellent cough mixture which is used in the treatment of chronic bronchitis, asthma and phthisis. In Northern India, the Juice of leaves is used in the treatment of diarrhoea, dysentery, haemoptysis and in the bleeding of dysentery. But in some region, the leaves are applied locally in the form of a poultice on rheumatic joints, inflammatory swellings and in neuralgis. It is also a good application for scabies and other skin diseases. Dried leaves are smoked as cigarettes with benefit in asthama. Fresh leaves are used in ophthalmia.
Butea frondosa, *koen*
6.2.2 Botanical Name : *Butea frondosa*, Roxb.

Family : *Papilionaceae*

Local Name : Kannada : Muttugadamara  
Sanskrit : Palaasha

Habitat : The tree mainly occurs in Bengal, South India and Burma.

Parts used : Gum, seeds, flowers, bark and leaves.

**Constituents** : Gum and bark contain kinotannic and gallic acid. Seeds contain fat (oil), water soluble albuminoid substances, glucose and small amount of resin. Leaves contain glucoside. The fat exists in the form of oil called moodaga oil and kino oil.

**Acids isolated from the oil** :

**Un saturated** : Oleic and lenolic acids.

**Saturated** : Palmitic and lignoceric acids. Orange red flowers yields a yellow dye.

**Action** : The gum is astringent. Seeds are laxative and anthelmintic. Leaves as well as flowers are tonic, astringent, aphrodisiac, depurative and diuretic.

**Uses** : Bark furnishes a very important exudation which hardens into a red brittle resin known as butea-gum or Bengal kino or Magugo, largely used as a substitute for the “kino” in India and to a limited extent in Europe also. It is useful in diarrhoea and dysentery. The powdered gum which is from grains of cinnamon, addition of little opium increases the efficacy. In large doses of gum is useful in cases of phthisis and haemorrhage from the stomach and bladder. Fresh juice is also applied to ulcers and relaxed, congested and septic sore throat, internally it is given in diarrhoea, dysentery and phthisis. It is also used as an anthelmintic and asperient. They are applied in orchitis. A weak decoction of the bark is useful in catarrh, cold and cough.
Cinnamomum cassia, Nees
6.2.3 Botanical Name: *Cinnamomum Cassia*, Nees.

Family: *Lauraceae*

Local Name: Kannada: Dalchini  
Sanskrit: Gudatvak

Habitat: This plant mainly grows in Ceylon, South India and Burma

Parts Used: Dried inner bark of the shoots from truncated stalks and essential oil.

Chemical constituents: Volatile oil, cinnamic acid, resin, tannin, sugar, mannit, starch, mucilage cinnomic aldehyde, cinnamul acetate and hydro carbon small quantities of phellandrene, pinene, linalol, caryphyllene, eugenol etc. are also present. The Ceylon variety mainly contains more sugars and aromatic principles. The fragrance is due to the presence of a volatile oil (oil of cinnamon) in the bark.

Action: Bark is carminative, antisparmodic, aromatic, stimulant, haemostatic, astringent, antiseptic, stomachic and germicide. Oil has vascular and nervine stimulant in large doses an irritant and narcotic poison.

Uses of the plant parts: This spice is the bark of young shoots. The bark in infusion, decoction powder or oil is prescribed in bowel complaints such as dyspepsia, flatulency, diarrhoea and vomiting.

It is frequently used as an adjunct to bitter tonic purgatives and vegetable and mineral astringents. The crystalline cinnamic acid is antitubercular and is used as injection in phthisis. As a powerful stimulant, Cinnamon is given for cramps of the stomach, enteralgia, tooth ache and paralysis of the tongue. The essential oil is used in flavouring sweets and confectionary and as a powerful stimulant in amenorrhoea etc.
Erythrina indica, Lamk.
6.2.4 Botanical Name : *Erythrina Indica*, Lamk.

Family : *Papilionaceae*

Local Name : Kannada : Haaluvaana  
Sanskrit : Mimbataru

Habitat : This tree occurs in Bengal and many parts of India especially in South India often grown in gardens as a support for black pepper vines.

Parts used : Bark and leaves.

**Chemical constituents** : Bark contains two resins and a bitter poisonous alkaloid called erytherine which also exists in leaves.

**Action** : Bark is antibilious, expectorant, and febrifuge and anthelminitic. It reduces “Vayu” and “Kafa”. Juice is vermifuge and cathartic. The drug is found to act on the central nervous system, so as to diminish it’s functions. Leaves are diuretic, laxative, emmenagogue. Erytherine is in action antagonistic to strychine and may be used as an antidote to strychine poisoning.

**Uses** : The decoction of bark is used in dysentery in worms and useful as a collyrium in ophthalmia.

Juice of the leaves mixed with caster oil is given for the cure of dysentery. Fresh leaves juice mixed with honey is used as a vermifuge. It acts as cathartic. It is also used as an injection into the ear for the relief of ear ache and as an anodyne for toothache. Crushed leaves are applied hot to rheumatic joints to relieve pain and as poultice. The drug is also used in the treatment of liver diseases. It is also used as an antidote to snake bite.

A decoction of the root bark is used in the treatment of diabetes. Juice of the bark and young leaves are used to kill worms in sores. Juice is given for syphilis. Young roots of the white flowered variety are used as aphrodisiac. Leaf juice is used to cure long standing dysmenorrhoea and also removes sterility in fatty women by gradually reducing fat and producing natural menstrual flow.
Ixora coccinea, Linn.
6.2.5  Botanical Name : *Ixora Coccinea*, Linn.

Family  : *Rubiaceae*.

Local Name  : Kannada : Kepala, Kissargida
               Guddada dasavala.
               Sanskrit : Raktata.

Habitat  : This small shurb is found every were in India.

Parts Used  : Root and Flowers.

**Chemical Constituents**: Root is found to contain an aromatic oil, tannin, fatty acids, and a white crystalline substance. Flowers contain a colouring and astringent principle of the nature of an organic acid, a wax, a yellow colouring matter.

**Action**: A sedative stomachic tonic, intestinal antispetic and cholagogue. Externally astringent and antiseptic.

**Uses**: Root is used in the treatment of hiccup, nausea, loss of appetite etc. The root pulp with pepper or in the form of tincture is a remedy in diarrhoea and dysentery. It is also useful in fever and gonorrhoea. The mixture of flowers and ghee is used in the treatment of dysentery, leucorrhoea and gonorrhoea. It is also used to reduce headaches. In sore throat, root is used in the form of tincture well diluted as a gagle.
Lasioclinon oriclophalus Deane
6.2.6 **Botanical Name**: *Lasiosiphon eriocephalus*, Decne.

**Family**: *Thymaleace*

**Local Name**: Kannada: Mukkadaka.

**Habitat**: The plant mainly occurs in Maharashtra, Karnataka, Tamilnadu, Kerala, Chhettisgarh and Ceylon.

**Parts Used**: Bark, Leaves.

**Chemical Constituents**: Root bark contains coumerin, Lasio bicephalin, Sitosterol, Leaves contain coumerin and Lariocerin.

**Uses**: The stem bark of this plant is spread over the surface of water which after few hours results in death of fish. The traditional healers of Chettishgarh specialized in treatment of different types of cancer use leaves and bark of this plant both internally as well as externally in treatment.
Momordica charantia. *Linn.*
### 6.2.7 Botanical Name

<table>
<thead>
<tr>
<th>Family</th>
<th>Local Name</th>
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<tbody>
<tr>
<td><em>Momordica charantia</em>, Linn.</td>
<td><em>Kannada</em>: Hagala – Kayi</td>
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<tr>
<td><em>Cucurbitaceae</em></td>
<td><em>Sanskrit</em>: Karavella</td>
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#### Habitat
This climbing plant grows everywhere in India and is cultivated in gardens for its fruit.

**Parts used**: Fruits, seeds and leaves.

**Chemical constituents**: A bitter glucoside soluble in water, insoluble in ether, a yellow acid resin and ash.

**Action**: Fruit is tonic, stimulant emetic, antibilious and laxative. Fruit pulp, leaf juice and seeds are anthelmintic. Leaves act as galactagogue. Root is astringent.

**Uses**: Fruit is useful in gout, rheumatism and sub-acute cases of the spleen and liver. It is supposed to purify blood and dissipate melancholia and gross humours. Fruit and leaves are both administered internally in leprosy, piles, jaundies etc. Leaves act as galactagogue. Leaf juice with black pepper is applied round the orbit for night-blindness. Leaf juice is rubbed to soles in the burning of the feet. Root is applied externally as paste to piles. Juice of the fruit with chalk or with sugar is used in opthae. It is also useful as an emmenagogue in dysmenorrhea. Externally it is applied to the scalp in particular eruptions to burns, boils etc. The plant is used in snake bite also.
Sapindus laurifolia, Vahl.
6.2.8 Botanical Name: *Sapindous laurifolia*, Vahl

**Family**: Sapindaceae

**Local name**: Kannada: Anttuwaala (Kookatakayi)

**Sanskrit**: Aristha, Phenila

**Habitat**: This tree mainly occurs in South India and cultivated in Bengal.

**Chemical constituents**: Fruits contain about 11.5% of saponin, besides glucose and pectin. The thick cotyledans contain 30% of white fat. If saponies easily. Seeds mainly contain viscous oil.

**Action**: Tonic, expectorant, emetic and purgative. Seeds are narcotic and acrid poison.

**Uses**: Fruits are employed as emetic, as purgative nauseant and expectorant. Pulp is given in doses as anthelmintic and is given to people bitten by venomous reptiles, also to those suffering from severe diarrhoea and cholera.

Root also has expectorant property. A thick watery solution of the drug dropped into the nostrils relieves hemicramia, hysteria and epilepsy by irritating the mucous membrane and increasing its secretions. The mixture of paste and vinegar is externally applied to bites reptiles and centipedes, scorpion sting etc. The kernel of the seeds are used to stimulate the uterus to child birth and in amenorrhoea. Fragrant leaves are used in baths for painful joints and the root in gout and paralysis. The fruit grows in clusters on a large tree and consists of black seed with a reddish brown fleshy covering which when bruised and mixed with water forms a soapy lather.
Strychnos mux-vomica, Linn.
6.2.9 **Botanical Name** : *Strychnos nux-vomica*, Linn  
**Family** : *Loganiaceae*

**Local Name** :  
- **Kannada** : Kasarkanamara  
- **Sanskrit** : Kupilu, Kulaka

**Habitat** : This tree occurs in tropical India, Malabar and Coromandal Coasts, Cochin, Southern India, Orissa and Ceylon.

**Parts used** : Stem bark, dried ripe seeds called nuxovomica

**Chemical Constituents** : Indian nux-vomica seeds contain alkaloids (Strychine, brucine, vomicine, Igasurine, Igasuric or strychnic acid and loganin).

**Action** : Dried seeds, which are intensely bitter to taste and very hard, and nervine, stomachic tonic and aphrodisiac, a spinal stimulant and also respiratory and cardiac stimulant. In excessive doses, it is a virulent poison producing tetanic convulsions.

**Uses** : Nux-vomica seeds produced a sort of intoxication for which they are habitually taken by some as an aphrodisiac. Powdered nux-vomica seeds is used in the treatment of dyspepsia and diseases of the nervous system. It is used for variety of indications like tremor, nervous debility dysentery and constipation. The drug is extensively used in small doses as a valuable tonic and in the treatment of certain forms of paralysis and other nervous diseases. It is used as a remedy in intermittents, dyspepsia, chronic dysentry, atonic diarrhoea, paralytic and neuralgic, affections, worms, hysteria, mental emotion, epilepsy, chronic constipation from atony of the bowels, prolapsus of the rectum, gout, chronic-rheumatism, insomnia from over fatigue and hydrophobia. In neuralgia of the face and gastralgia, in sexual impotence, spasmodic diseases as vomiting of pregnancy, chorea and epilepsy, it's effects are well marked. Wood is a popular remedy in the dyspepsia of vegetarians.
Juice of fresh bark is given in doses of a few drops in cholera and cuts dysentery. Root bark paste with lemon juice is used in the treatment of cholera. Bark is sometimes employed in infusion of weak decoction, and the root which is very bitter is used to cure intermittent fevers and the bites of venomous reptiles. A paste of nux-vomica seeds is used in rat bites and also in chronic rheumatism. Leaves of nux-vomica are applied as poultice to sloughing wounds or ulcers when maggots have formed.
Tectona grandis. Linn.
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<tr>
<th><strong>6.2.10</strong></th>
<th><strong>Botanical Name</strong> :</th>
<th><em>Tectona grandis</em>, Linn.</th>
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<tbody>
<tr>
<td><strong>Family</strong></td>
<td>:</td>
<td><em>Verbenaceae</em></td>
</tr>
<tr>
<td><strong>Local Name</strong></td>
<td>:</td>
<td>Kannada : Tegu</td>
</tr>
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<td></td>
<td></td>
<td>Sanskrit : Saka</td>
</tr>
<tr>
<td><strong>Habitat</strong></td>
<td>:</td>
<td>It occurs in central India, Konkan, W. Deccan peninsula, South India and Burma.</td>
</tr>
<tr>
<td><strong>Parts Used</strong></td>
<td>:</td>
<td>Seed, wood, oil of the nuts.</td>
</tr>
</tbody>
</table>

**Chemical constituents** : Calcium phosphate, silica, ammonium and magnesium phosphate and resin. Wood contains in its cavities white crystalline deposits of calcium phosphate, silica and ammonium and magnesium phosphate, also a resin. Seed contains a fatty oil. Paste is made from the wood. It is a local refringerant and sedative, astringent, hepatic, stimulant and diuretic.

**Uses** : Wood brayed in water used in the treatment of headache, toothache and to subdue the inflammation and irritation of the skin set up by the use of marking nuts and cashew nuts. It is also used dispersing inflammatory swellings. Oil of the nuts is used to promote the growth of hair and also to cure itchness of the skin. Bruised seeds with palasa papada are used as varaliens over the pubes in partial suppression of retention of urine.
Terminalia belerica, Roxb.
### 6.2.11 Botanical Name

<table>
<thead>
<tr>
<th>Family</th>
<th>Local Name</th>
<th>Habitat</th>
</tr>
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| Combretaceae | Kannada : Tanrikai, Tarekaayi
          | Sanskrit : Vibhitaka | A tree common in Indian forests and plains. |

**Parts used**: Fruits.

**Chemical constituents**: Bleric myrobalans consists of gallo-tanmic acid, colouring matter, resins and a greenish – yellow oil.

**Action**: Astringent, tonic, expectorant and laxative

**Uses**: Fruits are used in the treatment of coughs, hoarseness, eye diseases, scorpion-sting etc. The pulp of fruit with pepper is given in the form of electuary in cough, hoarseness, sore throat and dyspepsia. The inside of seed pasted with in few black pepper and little treacle from date-palm is used in the treatment of dysenteric-diarrhoea. The cortical portion of the fruits is kept in mouth for the relief of sore-throat, cough and cattarrh. It is a constituent of triphala. It is used in the treatment of liver and gastro-intestinal tract and in a large variety of diseases. Kernel is narcotic and astringent and is used as an application to inflamed parts. The leaves are used in dyspepsia. Kernel eaten daily increases the appetite for sexual indulgence. Oil extracted from kernel is used as a dressing for the hair. It is applied in rheumatism. Unripe fruit is purgative, dried fruit is astringent and employed in dropsy, piles and diarrhoea and in fever. Fully ripe or dried fruit mixed with honey is used as an application in ophthalmia.
Vitex negundo. Linn.
6.2.12 **Botanical Name** : *Vitex negundo*, Linn.  
**Family** : *Verbenaceae*  
**Local Name** :  
- Kannada : Lakki – Gida  
- Sanskrit : Sephalika  

**Habitat** : It occurs in Bengal, Southern India and Burma  

**Parts Used** : Root, Fruit, Flowers, Leaves and Bark  

**Chemical Constituents** :  
Leaves contain a colourless essential oil of the odour of the drug and a resin. Fruits contain an acid resin, as astringent organic acid, malic acid, traces of an alkaloid and a colouring matter.  

**Action** : Leaves are externally antiparasitic and powerfully discutient, internally alternative aromatic bitter and vermifuge anodyne. Root is tonic, febrifuge, expectorant and diuretic, dried fruit acts as a vermifuge. Flowers are cool and astringent.  

**Uses** : Leaves are used in the treatment of inflammatory swellings of the joints from acute rheumatism, gonorrhoea and orchitis. Fresh leaves are also used in catarrh and headache. Leaves bruised are applied to the temples for headache. Leaves juice removes foetid discharges and worms from ulcers. Leaves are applied as plaster to enlarged spleen. An oil prepared with the juice is applied to sinuses and scrofulous sores. Oil is found to effect marvellous cures of sloughing wounds and ulcers. A compound oil prepared with the juice of vitex negundo and eleven other substances in different proportional acts as specific for syphilis, venereal diseases and other syphilitic skin diseases. A decoction of the leaves with pepper is given in Catarrhal fever with heaviness of head and dulness of hearing. Leaves with garlic, rice and gul as a remedy for rheumatism.
The study of these medicinal plants and their pharmacological activities has been initiated in our laboratory. Preliminary screening of crude extracts of these plants indicated that extracts of stem bark of *Lasiosiphon eriocephalus* possesses substantial antimicrobial activity, hence this plant was taken up for further investigation. Survey was carried out in Thirthahalli taluk of Shimoga dist. Discussion with native Ayurvedic Physicians and Unani Hakims, who practice age old Indian system of medicine (ISM), revealed that the stem bark of *Lasiosiphon eriocephalus* has been used in fish killing. Moreover, this plant is available in and around Thirthahalli taluk of Shimoga dist.

The stem bark of the plant *Lasiosiphon eriocephalus* was collected, shade dried, cut into small pieces, coarsely powdered and extracted with ethanol under cold conditions. The crude extract of this plant obtained after evaporation of ethanol was examined for antimicrobial activity using Cup-Plate method. For comparison of the activity tetracyclin and fluconozole were used as standards for antibacterial and antifungal activity.

This preliminary investigation of antimicrobial activity revealed that the bark of *Lasiosiphon eriocephalus* exhibited considerable activity. Survey of the literature also revealed that this plant has received less attention of botanists, biochemists or chemists.

These observations encouraged us to take up detailed investigation about this plant, which has been described in the next chapter.
Reference:
