INTRODUCTION, DESCRIPTION AND LITERATURE SURVEY OF SELECTED PLANTS

1.1 INTRODUCTION
Contribution of plants is remarkable in diversified industries such as drugs and pharmaceuticals, fine chemicals, cosmetics, industrial raw materials etc. Some of the drugs used presently are obtained from the different plant sources Banarji et al, 1993. The latest investigations show that 60% of the anticancer and anti infective drugs are commercially obtained from the plant sources. Shu et al, 1998.

The art of the synthetic drug development is tremendously increased than the extraction from the natural sources. Thus the drug discovery has taken the economical way to utilize the plant products. Now the research is continuous in the Natural product area, because of the presence of the secondary metabolites which are responsible for the respective activity.

Some of the important drugs were isolated from common plants. For example, the most potent anti leukemia drugs vincristin and vinblastin were obtained from the plant Catharanthus roseus, which was previously used for diabetis
The distribution analysis of the medicinal plants shows that they are distributed across diverse habitats and landscape elements. 70% of the medicinal plants in India are found in tropical forests in Eastern and western Ghats, Chota Nagpur plateau, Aravalis, Vindhya and the Himalayas. Remaining 30% are found in alpine, temperate areas and higher altitudes have good therapeutic values. The microanalysis shows that one third is trees and shrubs and remaining one third herbs, climbers and grasses. Small amount of the medicinal plants belong to lower plants like Algae, Ferns etc.

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<tr>
<th>Type</th>
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<tr>
<td>Trees</td>
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<td>Herbs</td>
<td>32%</td>
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<td>Shrubs</td>
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<td>Climbers</td>
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<td>others</td>
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Man, like other animals is dependent on the plants and other animals for his food. In ancient days, man, while searching for food, came across many plants which could not be used as food but has medicinal properties and could be used for curing many ailments. This is the beginning stage for identification of "MEDICINE".

Man has progressively civilized and started to live in different groups, in which each group has particular duties. The group dealing with the medicine has become more prominent. The medicines could not be always found, so, man started collecting them and stored them in the form of the powders by
drying and pounding the plants. This became the initial step for the beginning of "PHARMACY".

During the development of the PHARMACY, many systems of medicines are evolved across the world. Like Ayurveda and Siddha from the Indian Sub-Continent, Unanine system from the Chinese and Greece, Amechie system from Tibet. Later, the improved contacts and trades between the different civilizations lead to the mutual exchange of the various medicinal plants, thus huge number of plants and other products came into use for treatment of diseases.

In any Traditional system of medicine, plants are the major source of therapeutic agents. Several chemotherapeutic agents in the allopathic system are also developed after screening of various medicinal plants in various parts of world. The isolation of the pharmacologically active principles, such as Cocaine, Ephedrine, emetine, Caffeine, Reserpine, Caffeine, Sennoside, Guggul sterols etc. are obtained from the traditional medicinal plants. It has been estimated by WHO that 80% of 4,000 million inhabitant species of plants of the world chiefly used in the traditional medicine for cure of the primary health problems. Major part of the traditional therapy includes the use of Plant extracts or their active compounds Farnworth et al, 1985. Plant derived drugs are also used in the developed countries like USA, Canada etc. For example, in USA 25% of all prescriptions dispensed are the plant extracts or the active compounds obtained from higher plants.

Screening for the pharmacological activity or biological activity is the first step in the research of the new drug obtained from an herbal source. The success is directly dependant on the correctness of identification of the plant
source. So, identification and authentication is important in research of the drugs. All the experiments and subsequent analysis are done after identification of the plant by Botanist.

Pharmacognosy and Phytochemistry play a vital role in the drug identification. Botanists and chemists have been trying from many years to find out taxonomic relation between the different plants or groups containing similar constituents. Bate-Smith et al., 1959 and Gibbs et al., 1945 observed that closely related plants have the similar active principles in them and can often act as the guidance to know the nature of unknown isolated compounds.

The author has taken plants for the research work after a correct identification done by the authenticated Botanist. Pharmacognostiastic characters are also studied for *Millingtonea hortensis* (L) bark as a part of research work.

The chemicals obtained from the plants are classified as either primary or the secondary metabolites. Nucleic acids and Proteins are generally excluded from the classification. Primary metabolites are distributed in one or another form in virtually all organisms. These compounds are often concentrated in seeds and vegetative storage parts of the higher plants. Primary chemicals are needed for physiological development, because of their role in the cell metabolism. Primary metabolites obtained from the certain higher plants have higher commercial value (e.g.: vegetable oils, Fatty acids, Carbohydrates etc.). They are restricted to a particular taxonomic group (Species, Genus, Family or related group of families). Secondary metabolites don't have any apparent significance in the plants, but often have ecological role such as pollinator, attractants, repellant chemical adaptations to the environmental stresses or
serve as chemical defense against Insects, higher predators, micro-organisms et. Secondary metabolites are accumulated by the plants in very smaller quantities than the primary metabolites. Secondary metabolites are synthesized in specialized cell types and distinct development stages of the plant. As a result, the secondary metabolites are used commercially as therapeutically active compounds and are generally high valued low volume products than the primary metabolites (e.g.: alkaloids, steroids which are used in the drug manufacture by pharmaceutical industries)

These are generally obtained from the plant materials by extraction with various organic or aqueous solvents. They generally have a low molecular weight (generally <2000).

Biologically active secondary metabolites have found a model compounds or drug entities for the synthesis or semi synthesis of the drugs in the laboratory Hister et al, 1987. In the synthetic process the chemist employ heat and pressure are affected in plants at ordinary temperature and pressure. The synthesis of quinine like alkaloids, after intense work in the laboratory took over half a century, while the Cinchona plant can synthesize it without difficulty every day Chopra et al, 1956 The plant active principles may be isolated and used as starting materials for drug synthesis or therapeutic agents or they may serve as models for pharmacologically active compounds in the synthesis or semi synthesis of drugs. The well known examples are Morphine, Digitoxin, Atropine, Penicillin and Colchiane Hansel et al, 1972. The scientific investigation of the herbal plant not only explains a particular type of activity
which has been reported in the literature but who brings out newer and unexpected activity.

For example, the medicinal plant, *Rauwolfia serpentina* (Sarpagandha) has been used as anti-lunacy drug since longer period of time, but after detailed investigation led to the extraction and isolation of the alkaloid namely Reserpine, which was found to be used as a antihypertensive drug. Similarly, *Vinca rosea* has been used as an anti-diabetic drug for longer period of time, but after extraction and isolation of *Rauwolfia* alkaloids led to its newer use as an antihypertensive drug. Further, critical isolation has revealed that *Vinca rosea* two anti leukemic principles, 'Vincristine' and 'Vinblastine' as major constituents. The local physicians in eastern Mediterranean countries and Saudi Arabia often prescribes a seed decoction of local plant namely 'Ammi visnaga' as a antispasmodic and diuretic for the treatment of renal collie. Investigations show that acute principle to be 'Khellin', which they found as vasodilator with selective action on the coronary arteries. Further investigation demonstrated the value of 'Khellin' in treatment of Angina pectoris.

After the discovery of the Ephedrine from "Mahaung" Chinese drug from Chinese material medica has attracted the attention of many western research workers.

There are many drugs which are questionable in their therapeutic value have kept into indigenous medicines and excluded after due investigation. Moreover, there are thousands of medicinal plants yet to be explored for their potentially active principles and a systematic investigation is necessary to bring out the best for the benefit of human welfare.
It is true that the literature of the medicinal plants reported in curing different types of diseases. This is complemented by the actual use of many medicinal plants which are never mentioned in literature.

Scientists who are interested in carrying out the research on the medical plants and doctors are keen to use both such herbals for therapeutic value. UNICEF and WHO are very much interested in medicinal plants to be used for the treatment of various diseases especially for air-borne and water-borne diseases.

Indian research organizations such as Council of scientific and Industrial research, Development of science and technology, Indian council of Medical research, Department of Biotechnology, University Grants commission are encouraging the exploration of the new methods pertaining to herbal drugs, that are mentioned in the traditional system of medicine such as Siddha, Ayurveda and Unani. This is mainly due to the safety, economic, efficacy and less toxicity to these herbal medicines.

It is generally believed that 50% of the active compounds used in modern medicines were derived from medicinal plants.

It is well known that 10,000 of 250,000 flowering plants have been explored scientifically for their medicinal values. In the international conference "The use of medicinal plants at primary health care level" held in Kuwait in 1985 organised by Mediterranean WHO office has mentioned 12 conditions, for their use at primary health care level for which the herbal remedies could be used are tested below

- Pain and inflammation
- Arthritis
- Fever
- Gastrointestinal Diseases
- Allergy
- Respiratory diseases
- Urinary tract infections
- Helminthes diseases
- Burns, Wounds, Swellings
- Scorpion stings and snake bites
- Skin diseases
- Eye diseases

The criteria for the selection of the medicinal plants have conditions like.

- Actual use of the medicinal plants in countries of the region.
- Scientific literature indicating the efficacy of the plants in certain diseases.
- Use of medicinal plants for their therapeutic purposes outside the region of criteria
- Mention about the herbs in every texts for their therapeutic effect

The traditional approach of the medicinal plants consists of several steps which are listed as follows.

1. Identification of the medicinal plant which is reported in use.
2. Collection of medicinal plant.
3. Transport of the herb to the research lab.
4. Storage of the medicinal plant.
5. Extraction of the medicinal plant.
7. Fractionation of the active molecule.
8. Structural elucidation of the bioactive molecules.

There is a thought that with the discovery of the synthetic drug, the interest in the herbal research is declined. But it acted as a stimulant to work in this field. The herbal medicines started their significance in 20th century. The synthetic drugs are slowly sidelined by herbal drugs due to their side effects and drug resistance. In this context, the governments of various countries are forward to regulate the trade of herbal medicines which necessitates the authentification and standardization of the herbal medicines.
1.2 ROLE OF PLANTS IN CANCER TREATMENT

Cancer is a general name applied to a series of malignant diseases which may affect various parts of the body. These diseases are identified by a rapid and uncontrolled formation of abnormal cells. These cells are united together to form as a growth or tumor. If the process is not arrested, it initiates the abnormal growth at other sites of the body until it causes the death of the organism. Cancer is commonly encountered in all higher animals and plants also develop growth that resembles cancer. The main forms of cancer are radiation, surgery and drugs (cancer chemotherapeutic agents). The good anticancer drug should kill or incapacitate cancer cells without causing more damage to the normal cells.

Plants have been used in the treatment of malignant diseases for centuries. Recent phytochemical and pharmacological studies on plants which have a suitable history of use in folklore for the treatment of cancer. *Podophyllum hexandrum* yielded a number of glycosides with anti tumour activity. *Solanum dulemore* has been used for the treatment of tumors, cancers and warts. The active tumour inhibitory principle has been identified as β-solammarine which ions a steroidal alkaloidal glycoside. The protein frail ions isolated from the extract of *viscum album* could be used for the treatment of cancer. The most successful plant used in the treatment of cancer chemotherapy is *catheranthus roseus*. two indole alkaloids named as vinblastine and vincristine have been isolated from *catheranthus roseus* are used alone or in combination with other forms for cancer treatment Deewick et al,1976. Basing in the mechanism of action of anti tumour drugs, they have been classified as topoisomerase I and II inhibitors, DNA interactive agents, anti mitotic agents, inhibitors of growth factor receptor, inhibitors of nucleotide biosynthesis, function and/or protein thyrosine activity, nuclear regulatory proteins and cyclo oxygenase inhibitors Murkerjee et al, 2001.
**Epidemiology of cancer:**

Cancer is regarded as a group of diseases characterized by an 1. ability to invade adjacent tissues and also distant organs. 2. Abnormal growth of the cells and form as a tumor. 3. death occurs if the patient's tumor has increased beyond that stage. Cancer can occur at any tissue or site of the body. Cancer is classified as, a). *carcinomas*, which arises from epithelial cells lining the internal surfaces of the organs (e.g., mouth, intestine, oesophagus, uterus etc). b). *sarcomas*, which arises from the mesodermal cells of the various connective tissues (e.g., fibrous tissue, bone, fat). c). *lymphomas, leukemia, myeloma* arising from the cells of immune system and bone marrow.

**Prevalance:**

Cancer in all categories is causing about more than 12% of deaths throughout the world. Cancer is the second leading cause of death next to cardiovascular diseases in the developed countries. During 1996 Out of 51 million deaths in the world, more than 7 million were due to the cancer. In same year they estimated 17.9 million persons with cancer, surviving upto 5 years after diagnosis. From this, 10 million were women and 5.3 million had cancer of breast, colon, cervix. Among men lung, prostate, colorectal were more prevalent. It is estimated that 2-3 million cases of cancer patients are detected in India. About 700000 new cases are detected in each year, nearly half of the patients died in each year. Because of large population this provides a huge diseases burden for health services in the country.

From the analysis of various cancer cases the risk factors which involved in the development of cancer are tobacco, diet, alcohol, hormones and injections.
1.3 DIABETES MELLITUS

Introduction:

Diabetes mellitus is a clinical syndrome characterised by hyperglycemia due to deficiency of insulin. Lack of insulin affects the metabolism of the carbohydrate, fats, protein, water and electrolytes. Hyperglycemia, hyperlipidemia, glycosuria, negative nitrogen balance and sometimes ketonemia characterise the problems, which occurs due to the abnormal metabolism of glucose.

Thickening of the capillary basement membrane and other vascular changes which are associated with disease result in complications, which include coronary artery disease, premature atherosclerosis, intercapillary glomerulosclerosis and retinopathy.

The therapeutic classification recommended by the American Diabetes Association includes two major types.

1. Insulin dependent Diabetes Mellitus (IDDM, Type-I)
2. Non-Insulin dependent Diabetes mellitus (NIDDM, Type-II)

An estimation of 13 million people are reported to have diabetes and atleast 2 million are with Insulin dependent type. Type-I is associated with Ketosis is it is untreated. It is more commonly in juveniles and occasionally in adults. The normal blood sugar level is 120mg/100mL. When it exceeds normal level i.e., 180mg/100mL, sugar appears in urine. Diminished or lack of secretion of insulin secretion is the main factor which produces hyperglycemia. In diabetes mellitus, when the blood glucose level increase than 130mg/100mL, glycosuria occurs. Type-II (NIDDM) occurs in adults predominantly and most of the
patients are obese due to impaired action of Insulin, which may be due to a genetic factor.

Presently, the total number of patients suffering from Diabetes in the country is more than 16 million. In 1921, the Insulin extract was discovered which lessened the symptoms of Diabetes and became a landmark in the area of drug from natural source.

During World War II, Insulin was available in most of the countries and a research pertaining to substitute of Insulin from plant or synthetic source was done Henda et al, 1993.

Many herbal drugs in various formulations have been recommended for Diabetes. Many plants and herbs were found with glucose lowering efficacy when administered orally. Some of these plants were pharmacologically tested and were effective in Humans Lewis and Elwin-Lewin et al, 1977; Akhtar and Ali et al, 1984.

Plants from more than 50 families were reported to have hypoglycemic activity Henda and Chawla et al, 1989. The most important anti-diabetic plant include *Catheranthus roseus* (Apocyanaceae), *Cyamopsis tetragonolobus* (Leguminosae), *Syzium cummi* (Myrtaceae), *Grewin asiatica* (Tiliaceae), *Momorlica charatia* (Cucurbitaceae), *Steroa rebauliana* (Compositae) and *Trigonelia foenumgreceum* (Leguminosae) Olver Beaver and Zehnd (1979) have discussed about the oral hypoglycemic activity of these plants. Three methods of treatment for management of Diabetes are in practice; Diet alone, Diet with oral glycemic drugs and Diet with insulin therapy. Approximately 50% of the new diabetic cases can be controlled by diet alone. 20-25% require oral hypoglycemic drugs and 20-30% require insulin. Addition of Fenugreek in diet
for 20 days in diet for diabetic patients has demonstrated significant improvement Sharma et al, 1990.

1.4 AIM OF THE PRESENT WORK

The plant kingdom for its therapeutic use has been inadequately explored and there is a tremendous scope for the drug discovery for the human health problems. India has rich in plant wealth and also having excellent usage of medicinal plants with Ayurvedic science. The aim of the present study is to constitute something new to the existing knowledge of medicinal plants based drug discovery for the treatment of human ailments. The area of the present study includes phytochemical screening of various extracts, their pharmacological, microbiological and pharmacognostic studies associated with extraction, separation and characterization of isolated compounds.

Three plants were chosen for the above studies. A review of literature on phytochemical and pharmacological activities was discussed in chapter-I. Pharmacognostic studies of Millingtonia hortensis stem bark described in chapter-II. Phytochemical screening of three selected plant parts and extraction, isolation of two compounds with their characterization was discussed in chapter-II. Hypoglycaemic activity of Glochidion zeylanicum root and Cansjera rheedii root. Antipyretic, Analgesic and Antiinflammatory activity of Millingtonia hortensis stem bark were discussed in chapter-III. Anticancer activities of Glochidion zeylanicum root and Cansjera rheedii roots were discussed in chapter-IV. Antimicrobial & Anthelmintic activities of Glochidion zeylanicum root and Cansjera rheedii root were discussed in chapter-V.
List of the plants selected for research study:

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Botanical Name of the Plant</th>
<th>Family</th>
<th>Part selected</th>
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<tbody>
<tr>
<td>1.</td>
<td><em>Millingtonia hortensis</em></td>
<td>Bignoniaceae</td>
<td>Stem bark</td>
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<tr>
<td>2.</td>
<td><em>Glochidion zeylanicum</em></td>
<td>Euphorbiaceae</td>
<td>Root</td>
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<tr>
<td>3.</td>
<td><em>Cansjera rheedii</em></td>
<td>Opiliaceae</td>
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</tr>
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1.5 DESCRIPTION AND LITERATURE OF *MILLINGTONEA HORTESNSIS* (L)

*Millingtonea hortesnsis* Linn:

The plant *Millingtonea hortensis* Linn in Telugu as "Kavuki" belongs to the family *Bignoniaceae*. It is known as Kattumalligai by sambasivan Pillai et al, 1931 and Katumalli by Lushington et al, 1915 but it is really known as Kavuki for it is never wild and is an introduced tree. It is a tall tree, growing
throughout India and in other tropical countries. It is also known as Indian Cork Tree.

It is known by many vernacular names

**Vernacular Names:**

- **English:** Indian Cork Tree
- **Hindi:** Neem Chameli, Akas nim
- **Bengali:** Akas-nin, mini-Chambeli
- **Kannada:** Beratu
- **Malayalam:** Katesam
- **Marathi:** Akas-nimb, Kavala-nimb, Nimi-Chambeli
- **Telugu:** Kavuki
- **Tamil:** Mara-Malli

Family *Bignoniaceae* takes its name from Genera *Bignonia*, which got its name from that of a Frenchman, Prominent in the seventeenth century. The plants of this family are Shrubs, Climbers and trees, and has more than 100 genera with 600 species Bor & Raizada et al, 1982.

Most of the species are found in America, especially in South America. Many of these exotics are grown in India as ornamental plants in gardens, avenues and public areas.

Many of the family *Bignoniaceae* are night flowering. The fragment white flowers of *Millingtonea*, which was native of Burma and Malaya has now become naturalized in India, must certainly be cross-pollinated by long tongue moths.
The tree is hardy and grows well in moist climate, but also done fairly well in dry climate also. It seldom produces seed in some areas. Propagation may be done by sowing the seeds and transplanting seedlings about a year later, at the beginning of rains. The tree can be grown from cuttings, planted in spring by root suckers, transplanted in the rainy season. The underground parts retain vitality for two years after the tree has been cut Troup et al, 1921; Cameron et al, 1894.

The tree is chiefly grown for its handsome foliage and attractive fragrant flowers from September to November. It is also grown as an avenue tree in avenues Firminger et al, 1947 Troup II et al, 1921; Blatter and Millard et al, 1954; Benthall et al, 1946.

Wood of this tree yields durable timber. It is suitable for making furniture and ornamental work.

The Bark yields an inferior type of cork. It consists of bitter substance and some tannin. The leaves and Bark are used as anti-pyretic in Indonesia Gamble et al, 1922; Cameron et al, 1894; Trotter et al, 1944; Wehmer II et al, 1935.

**Exomorphic Features:**

A Tall tree upto 24m height, with straight trunk and elongated pyramidal crown with deep foliage, cultivated throughout India for ornament Anonymous et al, 1992.

**Wood:**

The wood is yellowish white in colour and soft and moderately heavy.

**Bark:**
The mature stem bark has an external yellowish grey and internal cream colour. The surface of bark is rough. The bark is about 1-2 cm thick and has a firm texture and obtains as flat pieces. The fracture is tough, gritty in outer region and fibrous in the inner region. The taste is sweet without characteristic odour.

**Leaves:**
2-3, pinnate, Leaflets-Oval to Ovate, Lanceolate.

**Flowers:**
Attractive fragrant flowers in terminal panicles, white or pinkish.

**Capsules:**
Slender and compressed.

**Seeds:**
Many, flat and winged.

**Literature:**
The shade – dried stem bark of *Millingtonia hortensis* Linn, popularly known as the Indian cork tree (Family: Bignoniaceae) has been found to contain β-Sitorsterol and hentracontanol Krishna C-Joshi et al, 1973.
A diuretic flavone glycoside scutellarein-5-glucononide was isolated from the leaves of *Millingtonia hortensis* (Linn) by Kar.K et al 1976. Scutellarein-5-glucuronide and it was found to have diuretic activity in rats. n-hentriacontanol and β-Sitosterol were isolated from the barks of *Millingtonia hortensis* Linn Krishna C-Joshi et al, 1973.

The ethereal and aqueous fractions of the ethanolic extracts of fresh barks of *Millingtonia hortensis* yielded scutellarein and new glycoside scutellarein-5-galactoside respectively Sharma at al 1968.

The alcoholic extracts of leaves contained β-carotene, dinatin-7-rutinoside, a flavonide Mangayarkarasi et al, 1984. The isolation of dinatin-7-rutinoside confirms that 6-oxigenated flavons are common in Bignoniaceae.

From the powdered flowers an unusual flavonone hortensin, has been isolated Gunya Praphatsara et al 1989.

Phytochemical and pharmacological studies of flowers of *Millingtonia hortensis* was carried out Anulakanapakro et al, 1987. They isolated hispidulin from a chloroform fraction of the methanolic extract which showed a bronchodilating effect on isolated rat trachea.

Chemical constituents of the roots of *Millingtonia hortensis* was studied by Lalit Prakash et al 1981. The lapachol, β-Sitosterol and paulownin fresh pods of methanolic extraction yielded hispidulin as a major component while
the outer rind of fresh pods gave acetyl oleanolic acid and dinatin alone in the fruits by Subramanyam et al, 1971.

The 50% of ethanolic extract of whole plant (excluding roots) showed diuretic activity in rats Bhakuni et al, 1971. The extract had no antibacterial, antifungal, anti protozoal, hypoglycaemic, anticancer activities effect on the experimental animals.

The LD50 of the extract was >1000 mg/kg in albino mice Bhakuni et al, 1971.

The bark extract showed antiviral activity against potato virus X Singh & Singh et al, 1972.

The leaves are used as antipyretic in Indonesia Anonymous et al, 1962.

Hispudilin a bioactive flavonoid isolated from the flowers of _Millingtonia hortensis_ which is tested for antiphlogestic effect by observing the inhibitory activity of 5-lipoxygenase pathway by Moongkarndi et al, 1991.

Isolation of five known compounds n-hentriacontanol, β-Sitorsterol, friendelin, epifriendelinol and chlonic chloride from _Millingtonia hortensis_ flowers in 2002.

Antibacterial activity against non-polar subfraction are studied _Bacillus subtilis, Enter cocus forcalis, Pseudomonas aeruginosa, Streptococas pyogenes_ in 2003.

Antimicrobial activity of leaf extraction with various solvents like Benzene, Chloroform and Petroleum ether for studied in 2006.
Mutagencity and antimutagencity of the flavonoids extracted hispidulin and hortensin from *Millingtonia hortensis* Linn, were studied by Chulasiri et al, 1998.

Non-ocosanoic acid, Ursolic acid, Oleanolic acid, 6-methoxy-5,7,4, trihydroxy flavone for isolated from *Millingtonia hortensis* flower in 2002.

**DESCRIPTION & LITERATURE OF CANSJERA RHEEDII (GMEL)**

The plant *Cansjere rheedii* is known as Mallimadugu teega Madhavachetty et al, 2008, Adivikaredu in Telugu.

**Description:**

Stragelles, branchlets tomentose, thorns recurved, Leaves ovate, oblong lanceolate, nerves 4-5 paired, obscure, glabrous, entire, acuminate to caudate. Flowers are yellow in colour, auxillaryspines, sepals, petals and stamens 4 each, disc 4-5 lobed, ovary ovoid, unilobular, ovule solitary pendulous, drupes ovoid 1 seeded.

**Distribution:**

It is generally found in slopes and lower altitudes of forests in all over Chittor District, Andhra Pradesh, INDIA. It is more abundant at Kapilatheertham area (Thirumala), Kalyanidam, Mamandur.

**Uses:**

The plant is used as a folk medicine for the treatment of diabetes, Jandice, cancer and kidney stones.

**Literature:**

A diuretic activity was observed from the aerial parts of *Cansjera rheedii*, by Sharma et al. 2009
Anti-nociceptive activity of the ehanolic extracts of *Cansjera rheedii* by both central and peripheral mechanisms was shown on Wrister albino mice by Varadarasou Mouttaya Mounnissamy et al. 2009

Acute and sub acute toxicity of the ehanolic extracts of *Cansjera rheedii* was evaluated in swiss mice and wrister-Albino mice. Pathologically, neither gross abnormalities nor histopathological changes were observed by Varadarasou Mouttaya Mounnissamy et al. 2009

Anti-helmentic activity by the various concentrations of ethanolic, chloroform and aquous extracts of aerial parts of *Cansjera rheedii* on the Indian earthworms *Pheritima posthuma*, which brought paralysis and death of the worms was found by Varadarasou Mouttaya Mounnissamy et al. 2008

Anti-inflamatory activity was shown by the ethanolic extract of the areal parts of the plant *Cansjera rheedii* in rats by using the human red blood cells (HRBC) membrane stabilization method and carrageenin-induced acute paw edema model. (Varadarasou Mouttaya Mounnissamy et al. 2007)

**Structures:**
Hispudilin

Lupeol
Lup-20(29)-ene-1β,3β-diol
1.7 DESCRIPTION & LITERATURE OF GLOCHIDION ZEYLANICUM

(GARTEN)

The plant *Glochidion zeylanicum* (Garten) is known as Neerumamidi in Telugu. It belongs to the family Euphorbiaceae. In English it is well known as Melon Feather foil. Madhavachetty 2008 et al. It is dioecious small tree; branchlets zig-zag, coppery, glabrous, Leaves ovate-lanceolate or oblong, entire, sub-accuminate, base is unequal, glabrous above. Flowers greenish yellow in colour, auxillary subbinibellate, fascicles, perianth lobes- 6, free, unequal stamens 4 or more, ovary 4-5 locular, capsules globose, 8- 12 angled, style persistant, seeds, shining, wedge shaped.

It is distributed occasionally along the streams and in moist deciduous forests. It is grown at the places of Talakona, Kapilatheertham in Tirumala, Chitoor District, A.P,INDIA. Flowers and fruits are seen throughout the year.

**Uses:**

Bark : Stomachic
Leaves : cancer, diabetes
Fruits : Refregerent
Whole plant : Cancer & Diabetes

**Literature:**

Four lupane-type triterpinoids, glochidonol, glochidiol, Lup-20(29)-ene-1β, 3β-diol and glochidone were isolated from stem bark of *Glochidion*

Glochidionionosides A-D; Megastigmane glucosides from leaves of *Glochidion zeylanicum (Gartn)* by A. Juss et al. 2003.

Lignan glucosides and neolignan stulafate were isolated from the leaves of *Glochidion zeylanicum (Garten)* by A. Juss, Otsuka et al. 2000.

Six lignin and neo-lignan derivatives were isolated from n-BuOH-sol fraction of MeOH extract of the leaves of *Glochidion zeylanicum.*
A novel dimeric butenolide, glochidiole from the leaves of *Glochidion acuminatum* Muall by Otsuka, Hideaki et al. in 1998.