Chapter-5

Summary and Conclusion

5.1 Introduction:

In the era globalization vast advanced technology based society developed and depends upon the modern life style. It affects the social discontinuity of tribal and rural people. There is need to study life style of tribal people and its system of medicines they are used in the particular adverse time. In the forest life, they generally used so many plants which are medicinally very important and endemic to particular area. Endemism of that plant contain large number of secondary metabolites and these compounds generally used on specific effects on the human physiology. But in this era of industrialization man interfere in the core ecosystem of nature i.e.
forest so that total number of endemic plants has been depleted from nature. So there is urgent need to take important steps so that we can cover the lost ecosystem balance.

The particular plant species found in that area contain very low quantity and in nature it is not found in any other plant species. So for satisfy the public need of society we must involve the biotechnological approaches, so we can conserve and synthesis the new compound from the plant extract and produce in technology involved for sustainable development of the plant species in that particular area. Chemotechnology and chemical sciences will helpful for developed chemical structure of that particular secondary metabolites so it used to protect the plant from nature.

This research work based on the various aspects of plant like ethnobotanical aspects, phytochemical analysis, biological activity of the plant. Detailed research work presented in this thesis in four chapters including review of literature.

In Ayurvedic system of classification, controversial drugs has identified noted in Vedic literature. Now days there are many as sophisticated technology and microbial techniques which will be help full to authenticate this plant species, tally its medicinal value. In this review we focus on the various importances of Nervine tonic plant species *A.indicum*. Review deals with its antibacterial, anti inflammation, antidiabetic and other various application on varied diseases. *Abutilon indicum* is important in folk fare medicine and in pharmaceutical companies. This review is helpful for study further scientific approach to enhance the production of active compounds without substituting the natural population.

**Keywords:** *Abutilon indicum*, Ayurvedic system, controversial drugs, plant species, tonic plant species, antibacterial, application on varied diseases, fare medicine.

Our day to day life herbs plays an important role. They were the only source of medicine in olden days. Even today herbs are equally important to modern drugs as they have fewer side effects when compared to synthetic drugs. Among so many herbs, during past several years, from traditional system of medicine for the treatment of different ailments, there has been growing among the usage of various medicinal plants. A amount of utilization for herbs belonging to species *Abutilon* is noted for their medicinal benefits in traditional system of medicine. A lot of medicinally important assigns have been assigned to the plants of this specie. The importances of this specie which have been so far explored include *A. indicum, A. theophrashti, A. grandiflorum and A. muticum* etc. Also, multitude of reports on *Abutilon* spp.
indicates continuous scientific research on it with special reference to their medicinal cultivation and biotechnological applications. In light of this, the present review aims at exploratory survey scientific findings on the various plants of this specie, but only a few of this medicinal importance out of which the eminent ones are: 1. Abutilon indicum, 2. Abutilon grandiflorum. 3. Abutilon theophrashti. 4. Abutilon muticum. 5. Abutilon pannosum. 6. Abutilon megapotamicum. Nearly 150 different species of Abutilon occur. Abutilon indium (local names; Atibala, karandi, peely or booti) is woody, shrubby plant, an erect, plants are usually distributed within sultry countries in India it is mainly leading through the whole of northern with central India and found in the outer Himalayan tracts from Jammu to Bhutan up to an altitude of 1500m and [18].

Traditional uses:

In Ayurveda this plant show high medicinal importance, whole plant is medicinal properties for enormous possible cure various diseases. Traditionally, directly root and bark are used as the plants are using in gonorrhea treatment, piles, inflaming, as an immune stimulant and anti diabetic, aphrodisiac, diuretic and nervous tonic. Seeds are used in urinary disorders, in the treatment of cough as well as laxative in piles. The seeds are employing softening and demulcent purposes to the Chinese in Hong Kong. To formulate into an ointment for quick ulcer healing the juice from its leaves has been used. Relieving thirst its extract is also used in; in treating diarrhea, bronchitis, and inflammation of the bladder, in reducing fever, and gonorrhea [19]. In addition to this it is used in ulcers, scavenging wounds, diabetes, treating vaginal infections, and opposition; and can also be used as hemorrhoids. Due to diuretic belongings the root of the Abutilon indicum Sweet plant can be taken for the relief of haematurias. In leprosy it is also effective in the treatment. Those having hemorrhoids and in the discussion of coughs, chronic dysentery, urinary disorders, puerperal disease, and also fever the seeds from this plant are considered to be aphrodisiac and can be used as a laxative for.

Chemical Constituents:

Phytochemical investigation of A. indicum leaves showed the presence of amino acids, glucose, fructose and galactose. Non drying oil consisting of various fatty acids from the roots viz. oleic, linolenic, palmitic, stearic, caprylic, myristic, unusual fatty acid having C_{17} carbon skeleton, capric, sitosterol, and abutilons A and (R)-N-(1'-methoxycarbonyl-2'-phenylethyl)-4-hydroxybenzamide, amyrin from unsaponifiable matter were yielded Kuo et al isolated two new compounds, as well as 28 known compound. Extract of whole plant is said to possess decreasing
per oxidative damage in liver through free radical scavenging activity of natural mosquito larvicidal agent Seven flavonoids compounds including quercetin due to its flavonoids Petroleum ether extract of this plant is also a potent source and its glycosides have been isolated from flowers of From genus Abutilon A. indicum steroids, Alkaloids, flavonoids, saponins and terpenoids have been isolated and characterized. To comprise two sesquiterpene lactones, β-sitosterol, geraniol Gallic acid and caryophyllene previous phytochemical investigations of Abutilon indicum showed it. Since it is known that they contribute, to the flavor the analysis of phenolic compounds in plants is of considerable commercial importance. For thousands of years, knowledge of herbs has been handed down from generation to propagation. In all traditional systems of medicines herbal drugs constitute a major part [23]. By botanist from the high ranges of the Himalayan tract upto the sea-shores of Kanyakumari numerous types of herbs have been well recognized and cataloged. For their primary health care, according to WHO nearly about 80% of the global population still rely upon the herbal drugs [13]. For the pharmaceutical products from the natural origin in all over the world because of their lesser side effects as equate with the modern system of medicine there has been an increase requirement. In ancient Sanskrit, ayurvedas literally meaning the "science of life and seniority" is one of the oldest healing systems of India, diet and herbs based on lifestyle. A respective position today Ayurvedic herbal medicines mainly based on plants enjoy, where modern health services are limited particularly in the growing countries. In a variety of clinical situations, diuretics are drugs that enhance the rate of urine flow, sodium excretion and are used to adjust the volume and composition of body fluids. In many life-threatening disease conditions drugs induced diuresis is good, such as congestive heart failure, renal failure, cirrhosis, hypertension, pregnancy toxaemia and nephritic syndrome. In hypertensive patients, this decreases cardiac work load, pulmonary congestion, plasma volume, hypercalciuria, oxygen demand, thus decreasing blood pressure & also treat the acute and chronic renal failure, cirrhosis of liver these also play an important role. Adverse effect on quality of life including impotence, weakness, with fatigue, most of the diuretic drugs have used. Which inhibit secretion of anti-diuretic harmones Abutilon indicum Linn Malvaceae sources aqueous naturally occurring diuretics include caffeine in tea, cola, and coffee, which conquer Na+ re-absorption and alcohol in beer, wine and inebriants, [4]. Botanical Characteristics of Abutilon indica
From the above review we can conclude that the plant *Abutilon indica* which is having a wide range of medicinal value due to their variety of chemical constituents can be further investigated on toxicological and other parameters to obtain a valuable marketed product. Apart from that the chemical constituents, who were found effective can also be synthetically prepared for better yield and obtain a pharmacophore which may be useful for drug design.

Regional names:

The plant is known by various names in different languages as well as it is also known by various names in different languages as follows:

- **Hindi name**: Kangahi, Kanghi, Kanghani,
- **Sanskrit name**: Kotibala, Kankatika
- **English name**: Country-mallow
- **Tamil name**: Tutti, Thuththi, and Peruntutti
- **Telgu name**: Tutiri-chettu, Thuteribenda

Systematic compartmentalizations:

- Plantae : Kingdom
- Angiosperms : (Unranked)
- Eudicots : (Unranked)
- Rosids : (Unranked)
- Malvales : Order
- Malvaceae : Family
- Abutilon : Genus
- Indicum : Species

*Abutilon indicia* : Botanical name:

Habit and Habitat:

The species occurs in number of tropical and subtropical areas and subtropical zones. The plant is found as a weed in sub-Himalayan tracts, hills upto 1200m and in hotter part of India. The plant is found in Sri Lanka, India, topical regions of Malaysia and America. An example occurrence within parts of the ‘Great barrier Reef’ islands of the ‘Coral sea’. *Abutilon indicum* have several pharmacological properties like, hepatoprotective, wound healing, analgesic, antimalarial, antimicrobial, hypoglycemic activity. The main chemical constituents are
carbohydrates, steroids, glycosides, flavonoids, tannins and Phenolic compounds. To the society to venture into a field of alternative systems of medicine, hence in this review article, effort has been taken to collect and compile the details regarding *Abutilon indicum* which will be useful to the society.

Conventional Use:

For the treatment of various ailments, almost all the parts of Atibala are of medicinal traditionally and importance used. The root of this plant is considered as diuretic, demulcent, urethritis and in chest infection. In strangury, haematuria and in leprosy, the extract of the root is prescribed in fevers as a cooling medicine and is considered useful. For ulcer and as a formulation to painful parts of body, the leaves are found to be good remedies. In tender gum, toothache and internally for inflammation of urinary bladder, the decoction of the leaves is used. The barks are used like anthelmintic, alexeteric and febrifuge, diuretic and astringent. The seed of this plant are using in laxatives, piles, gonorrhea expectorants with festering.

Ethano botanical Use:

There were other cultural groups and near about 400 different tribal and in India. About use of natural recourses as medicines, each tribal group is having their own folk languages, tradition, knowledge and beliefs. In ethno botanical surveys conducted by ethanobotanists, almost all the parts of this plant are documented to be useful. To use its parts for the medicinal purposes such as anthelmentic, febrifuge, anti-inflammatory, antiemetic, in urinary or uterine discharge, lumbago and piles. It has been documented that natives of India, Malaya, Philippine, Islands and Indochina etc.

To penis to cure syphilis, the seeds and leaves are crushed with water to form paste which is utilized [15]. In cataract and diarrhea, the leaves are used in eye wash, and for mouth wash. To cure piles and to relieve leg pains, a leaf paste is taken orally. During nighttime for about one month for cure of uterus displacement, the bread prepared from the mixture of leaf powder and wheat flour is taken daily. For the treatment of snakebite as antidote, the leaf juice when mixed with jiggery is used [17]. The fruits are using to cough gonorrhea and treat piles. To treat hemorrhagic septicemia, fruit decoction mixed with ammonium chloride is given orally with water. As aphrodisiac and laxative, seed powder is used orally with water. To treat gonorrhea and leprosy, the root of the plant is used. To cure fever, dry coughing and bronchitis, root infusion is given. Distributed in different geographical and ecological conditions wide spread in
the country, India has a rich collection of medicinal plants. For the discussion of various diseases and disorders, plants have been used since ancient time. For their Diuretic activity, the few herbal plant have been discussed which are previously explored by the various researchers. It can be concluded that in the core of the nature there are so many plants which possess potent diuretic activity, by this review. Dissimilar the allopathic medicines, herbal medications are free from side effects and toxicity. To provide an overview of knowledge adjoining the herbal medicines used as diuretics, the current review projected. In one way or another in different culture and civilization, such as Ayurvedic (India), herbal medicine, sometimes called traditional or natural medicine, hazel ways are existed.

The attention of scientist world-wide, several medicinal plants used in the Indian traditional system known as Ramayana (devoted to enhancement of the body’s resistance) have attracted. Also a wide range of anti-asthmatic, antioxidant, anti-arrhythmic, hepatoprotective, anti-inflammatory, cardio tonic, antifungal, other medicinal activities and diuretic, as discussed below, various medicinal plant exhibit not only immunomodulatory activity.

Pharmacology:

For the treatment of various ailments, almost all the parts of Atibala are of medicinal grandness and used traditionally. The roots of the plant are considered as demulcent, diuretic. In chest infection and urethritis, the leaves are found to be good for ulcer and as fomentation to painful parts of the body. In tender gums, toothache, and internally for inflammation of bladder, the decoction of the leaves is used. The barks are using as alexeteric, febrifuge and anthelmintic, diuretic and astringent. The seed are using in laxative, piles, in chronic cystitis, expectorant, gonorrhoea and gleet. About use of natural resources as medicines, each tribal group is having their own tradition, beliefs folk language, and knowledge. To be useful in ethnobotanical surveys conducted by ethnobotanists, almost all the parts of this plant are documented. The use its parts for medicinal purposes such as anthelmintic, febrifuge, anti-inflammatory, antiemetic, in urinary and uterine, it has been documented that the natives of Malaya, India, Indochina and Philippine Islands. The roots of this plant are using to treat leprosy and gonorrhoea. Roots infusions are given to cure bronchitis, fever and dry cough.

Anti-arthritis activity:

Anti-arthritis activity of Abutilon indicum was reported by Vallabh Despandey and coworkers. Various in-vitro anti-arthritis pharmacological models were studied and the results
conclude that herbal extract of *Abutilon indicum* showed dose dependent activity which was found to be better than that of acetylsalicylic acid.

Anti-inflammatory and Anti-asthmatic:

Anti-inflammatory and Anti-asthmatic activity was reported by Archana N. Paranjape and co-workers by carrying out various experimental studies. *Abutilon indicum* showed significant antiinflammatory activities when estimated used carageenans induce rat’s edema paw models. The results of this study indicated that possible mechanisms to actions of *Abutilon indicum* to the intervention for bronchial asthma are its mast cell stabilizing and anti-inflammatory activity.

Hypo-glycemic activity:

By S. Adisakwattana and co-workers, hypoglycemic activity of *Abutilon indicum* was assessed. In this study, for hypo-glycogenic effect in normal and streptozotocin-induced diabetic rats, methanolic leaf extract of *Abutilon indicum* was investigated. For lowering and suppressing elevation of blood glucose level, the results suggested that the extract of *Abutilon indicum* would be effective.

Wound healing activity:

S. Roshan and co-workers have evaluated *Abutilon indicum* for wound healing activity. The significant wound healing activity; they reported that ethanolic extract of A.indicum at a dose of 400 mg/kg shows get exhibited.

Anti-diarrhoeal activity:

By V.M Chandrasekhar and coworkers, anti-diarrhoeal activity of *Abutilon indicum* was assessed. The significant antidiarrhoeal activity in castor oil induced diarrheas and prostaglandin to E2-induced diarrheas, they reported that methanolic and aqueous extract possessed.

Antimalarial activity:

The mosquito larvicidal activity, showed by A. A. Rahuman and co-workers stated that β-sitosterol isolated from the petroleum ether extract of leaf of A. indicum.

All over the globe the curative property, minimal side effects with less toxicity, due to this the traditional systems of medicine have become significantly more popular. For the human ailments from time immemorial, it is more widely used. The 70-80% of world’s population relies on traditional healthcare it has been estimated. In traditional medicine varies from place to place, the
mode of preparation and plant used. Especially herbal medicines in the developed world are sharply increasing, in addition acceptance of traditional medicines, [6].

The method for evaluation from drugs by veteran collectors experience should be confirmed by scientific methods before starting the research work. Evaluation has become even more difficult when several different individual species were powdered and mixed together in a proprietary medicine.

The most ancient still living traditions remain in Ayurveda, like Traditional Indian Medicine (TIM) and Traditional Chinese Medicine (TCM). With sound philosophical, experimental and experiential basis, these are the two ‘great traditions’. For several chronic diseases, microbial resistance, high cost of new drugs and emerging diseases are some reasons for renewed in complementary and, increased side effects alternative medicines with lack of curative treatment.

Due to high medicinal value with simple availability in nature show the, free hand utilization. Including plant genetic diversity with medicinal properties has the potential of becoming major global player in market for medicinal plant based herbal formulations, products, and medicines along with approximately eighty per cent of world’s biodiversity? The major task for all the stakeholders including the policy planner is the identification and guided development of new products with large export potential such as medicinal plant given the extent of biodiversity in India. For overall development of the medicinal plants sector recognizing and addressing the needs of each of the different stakeholders involved requires a holistic approach.

Bio-prospecting Aspects in Important Medicinal plant of A. indicum:

To support health and livelihood security needs of rural communities, documentation of the A. indicum is diverse ethno-botanical knowledge of healthcare and its validation culminating in region specific herbal pharmacopeia is an important intervention. For self-reliance in primary healthcare of rural communities, this is a very important action agenda. To built around outstanding “knowledge households, folk-healers, reputed NGO’s engaged in community health and extension activities of colleges of Unani, Ayurveda, Siddha systems of medicine, the grass root schools for capacity building in primary healthcare.

To view planning for the development of the medicinal plant sector in a holistic manner, it is important for policy maker. For medicinal plants should be developed alongside strategies for revitalization with plans for Traditional Knowledge, by holistic is meant that conservation plans
and strategies. To encourage cultivation, a holistic approach would also assume the understanding that it is as important to promote in-situ conservation. From forests this would have a central bearing cultivation initiatives, it would acknowledge the need to regulate prices and wild harvest of plants. The epistemologically informed validation of the product and services recommended by the traditional health services of India, establishment of a chain of pharmacology alongwith pharmacognosy labs with clinical research centers.

- For conserving this important medicinal plant some primary steps to be taken
- The primary healthcare centers, NGOs, CBO folk healers and local households which can be using creation of regional pharmacopeias of medicinal plants and their reliable primary healthcare use.
- In public health centers uses of ecosystem specific plants, for creation of well-designed training programs for grass-root health functionaries
- Indian students and teachers are using medicinal plants, for their therapeutic applications and biological properties
- Manufacturing standardized herbal products for local, national and global, generating income and use and employment in rural communities a great network of community owned herbal enterprises

This review totally focused on the *A. indicum* important in folk fare medicines and in pharmaceutical companies. This review is helpful for the study of further scientific approach to enhance the production of active compounds without interfering the natural population.

5.2 Chapter- I

This chapter deals with the discussed the background for this work mainly based on the *Abutilon indicum*. Introduce the subject of research and give detailed information on the review of literature on the related work

Since in the old time, our traditional system of medicine and traditional knowledge requiring those medicinal plants as a whole or their parts are being used in all the way of skin diseases successfully including antibacterial and antifungal. As we know very well, now a days the medicinal preparation uncommitted in the commercialized from which most of them either not effective up to the mark has to originate opposition resulting in reoccurrence again. Plant
benefitted drug serve up for prototype to develop more valuable and less contaminated medicine. Constituents for significant component to medicinal plants be extensively scattered in India’s unlike tropical neighborhoods.

To cure dissimilar diseases tribals are using their traditional knowledge systems. They used plants as a resource of drug with trial and error methods and procedure are experienced more than hundreds of year. To cure for various diseases this plant leaves, bark and roots are applied. There is twofold objective study: to identify intercultural convergences of particular uses of *A. indicum* characters and to assess similarities in the use knowledge of *Abutilon indicum* among the main sociolinguistic groups of the areas where the species most abounds. To improve our understanding of the nature of management problems and options for conservation at local and regional levels, focusing on the function, knowledge, and management of establishes by people. Conservation of plant resources may vary with environmental factors such as species richness, abundance of practicable plants or commons diseases, and ethnical heritages of the people over working these resources by the local knowledge of the use.

Commonly called as ‘Country Mallow’ in English, ‘Kanghi’ in Hindi and ‘Atibala’ in Sanskrit, to the plant *Abutilon Indicum* (Linn.) from malvaceae family. This plant be returning flowering shrub; bark is soft tomentous which grows upto 2 to 3 meter in height *Abutilon indicum* (L.) Sweet known in Hindi as Atibala, found in the outer part of Himalayan tract hill up to 1198 meter from Bhutan and Jammu up to an altitude with fifteen thousands meter with extending all the way through the whole of central and northern India, Srilanka and topical region of Malesia, America etc. Leaves of this plant are toothed, oval-shaped, focus, rarely subtropic and 2 to 2.51 cm for length. Flowers of this plant are yellowish color, cerebral peduncle articulated greater than middle portion. Petioles are 4 to 8 cm lengthy; with 9 mm long stipules; pedicels are often seen 3 to 60 mm lengthy, articulated near to the peak; 12.6mm lengthy calyx, with separated in to lobes ovate, apiculate middle. Corolla of this plant is with 2.65 cm in diameter, yellowish, opening at theirs afternoon. Fruits of these plants are looking like capsule, horizontally disseminating beaks, compactly furry, with eye-catching observation. Stem of this plants are solid, branching and grows up to 1 to 2 meter hight. Seeds of this plant are 2 to 4 mm, tubercular, reniform, and circumstantially radiate hairy, black with brown creeper.

A survey of literature demonstrated that many important actions in this plant by in-vitro method, but very little attempt have been made to ethnobotanical important uses of the *Abutilon*
species in local areas and to set apart important active metabolites from plants. Present study is useful for analysis the main expressions like ethnobotanical important in local villages from Pune districts (Ambegaon) from state of Maharashtra. The imperative study to enlightened urgent steps for selection of plant for secondary metabolites extraction, phytochemicals with it’s practicable study to the biological action of Abutilon indicum.

Among the various references very little information is uncommitted on the ayurvedic important medicinal plant species Abutilon indicum. So there is need do some additional work on the uses of several plant parts used by tribal people for their area and society based practices, Phytochemical analytic thinking of these plant parts with different solvents and extraction process for approximate particular quantity of active metabolites in the particular plant parts. These are the important aspect regarding comparability, these consequences with ethnobotanical recitations and its application to the society, these dynamic metabolites extracted with different solvent arrangement applied to encourage study of biological activity and toxicity of the new refreshing compounds which are extracted from plant materials. Different solvent system contributes us different compounds in which this specific compound pretends on specific organs and physiological consequences on humans on day to day life.

5.3 Chapter -II

Present work focus on study climatic condition, vegetation type of Pune district and the ethnobotanical uses of plants by local tribe and other sub rural people from the Bhimashankar (Ambegaon) Forest range. Focus on to study the medicinally important plant Abutilon indicum with its morphology and to investigate the functions of this plant parts for human disorders and medicinal local application in that particular area. Collection of the data from the people of source for territorial areas with discussion, concerning about plants in between different age group people of trial areas. Ethnomedicinal information about the plants was collected on the groundwork of frequent interview with local physician practicing original organization of medicines, priest’ villagers, and tribal common people from Ambegaon tahsil from Pune district. Though the collected data were equated with reputed journal and books acknowledgments collected data of plant get identified by monetary standard flora which is written by Cooks “flora of Bombay government” [90], [146],[161], the prevail category of tree, herbs and shrubs which come under the amalgamated deciduous type of forestry. This character of forest consist of
Santalum, Tectona, Bamboo, Shorea, Ficus, Sterculia, Butea, Madhuca, Bombax and approximately amount of Dalbergia and other. The character which family presumed in those particular proposition fields according to the variegated climatical condition.

Like other state this type of vegetation gives the better medicinal plants, for the cure the disease by application of local methods with the help of Vaidu and other local practitioner. medicinally important and used continuously in that area on various diseases like digestive troubles, insomnia, epilepsy, memory enhancer, anti inflammatory, antibacterial, antifungal, antioxidant, various skin diseases, asthma, chest pain, heart troubles, earache, blood purifier, hepatitis, urinary congestion, kidney stone, urinary infection and edible fruits on nutrition value. Following plants used to treat maximum number of diseases Thespesia populnea Soland ex Correa, Pongamia pinnata (L) Pierre, Asparagus racemosus, Aloe vera (L.) Burm f., Emblica officinalis Gaertn, Vitex negundo L., Tribulus terrestris L., Adhathoda zeylanica, being families with maximum number of claims for used on various common health complaints Fabaceae, Euphorbiaceae, Asteraceae, Lamiaceae, Acanthaceae, Asclepiadaceae, Rutaceae, and Solanaceae and Lilliaceae. Literature survey and local maximal investigation of this important medicinal plant species Abutilon indicum show that very important practices takes place by these people, Compare to other used these work focus on the medicinal plant parts used on various diseases. Plant parts like roots, stem, leaves and matured fruits which are used by simple traditional way. This plant may contain various active metabolites except primary metabolites. This active metabolites like secondary compounds which are present in this plants, but very in small quantity and very specific effect on particular organ of the body so it need to investigate phytochemical tests for detection of new compounds like alkaloids, tannin, saponins, terpenoids and other active compounds.

The relationships between people and nature may differ from a cultural group to another, by the studying variations in knowledge across cultural group’s lies. The people’s perceptual experience and practices of natural resources management and use at the local level may vary with their background and transmissible inheritance, therefore, within a same geographical or ecologic area. For their long-time cultural fundamental interaction, the lack of kinship and the reach with a same outsider group or ecosystem comparability can be made amongst cultural groups [44]. A large segment of population are continue to serve by folklore system of medicine, particularly those intrabil and rural fields, no matter to the coming of present medicinal drug.
Ethnobotany is a new discipline studying the knowledge and traditional practice of the indigenous and ethnic societies in conservation and use of biodiversity for human health and nutrition.

The tribal inhabitants like Bhils, Andh, Gond, Mathuralabhan, Korku, Takonkar and others from small pockets of surrounding from this district. These ethnic peoples are using traditionalistic herbal formulations on the way to treat ordinary alimental though the accessibility of the Recent epoch pharmaceutical applicable drugs in the near by cities and towns. District has mostly persist unsophisticated through regards in the direction of study approximately the medicinal plants considering need of such report for the documentation of traditional medicine, tribal communities healthcare system and experienced elderly nearby village peoples from the Pune district be attempted. The current study is consequently an attempt to documents of dissimilar plants species that are used by the tribal communities from the Pune district (Tahsil - Ambegaon). The tribes such as katkari, varli, konkani, have been using these plants from time immemorial. These plants have been passed over from generation to generation about their knowledge. The present day traditional medicine human being or vaidu are rare and handful. Among the younger generations due to pigment of interest as well as peoples inclination to transmigrate at cities for profitable business there is option of throwing the prosperity of knowledge in almost opening. This is appropriate time to obtain and to maintain the traditional organization of medicines with by thoroughly identification and documentation of the specimen. This will help to their conservation through with cultivation and will come down the pressure to throughout exploitation from natural habitats. Majority of the conventional knowledge have be convinced into a recognize tool in search for new potential sources from drug with some neutraceutical. By applying quantitative ethnobotany approaches, these patterns in traditional knowledge amongst and within cultural groups can be better deciphered, which just documented traditional botanical knowledge to earlier ethnobotanical studies.

5.4 Chapter- III

This chapter focused on medicinal plants represents rich sources from which disinfectant agents might be found. In various countries these plants are applied and which is basic source for potent and useful drugs. *Abutilon indicum* is of the main traditionally important medicinal plant, so it is very widely used in local tribal people so this chapter deals to investigate preliminary
phytochemical screening of *A. indicum* leaf, stem, root and mature fruit with seed extract in different solvent like water, ethanol, chloroform, ether, acetone and methanol for quantitative and qualitative investigation of just about active secondary substances, in the direction of to determine ethno medicinal claim for this broadly use therapeutic plant. Identification is carried by standard flora, processing the plants substantial alongwith the help of extraction of plant material in different solvent system.

Saponins occur only in fruits and leaves extract, compare to the other plant extract. Alkaloids and terpenoids were found in samples i.e. leaf, stem and roots, where as saponins some amount of phenols were found in fruits with seed samples only. In this present work roots, stem and leaves bearing considerable amount of active metabolites and could be used as potential source of antioxidant, antimicrobial and various other biological activity to contribute the health benefit of the consumers.

The extraction of active compounds by different methods for the qualitative analysis and quantity of these compounds. The studies of plant provides new potential source to new practicable drugs. The chemical characterizations to the extract, quality standards with the identification of responsible bioactive compounds are necessary to further studies. Therefore extracts from *Abutilon indicum* plant is good source for applicable drugs.

5.5 Chapter- IV

The aim of the chapter is to focus on the toxicity of plant parts and antibacterial activity of *A. indicum* in the form of powder of aerial parts and prepare the crude extract. Five microorganisms investigated bacteria were *E. coli, S. epidermidis, E. aerogenes, P. vulgaris* and *K. pneumoniae*. The antibacterial action of the crude extort of *A. indicum* culture from the test bacterial were isolated in (0.1ml) containing $10^6$ cells/ml of organism was aseptically inoculated by spreading evenly onto the come out of nutrient agar plate using a aseptic broadcaster. For the toxicity of this plant extract in polyurethane case are used for any animal. The effective results obtained on *E. coli* and *K. pneumoniae*. The results obtained are encouraging as the ethanolic, aqueous and chloroform extracts have shown considerable uncontaminated activities versus experienced *E.aerogenes, E. coli, S. epidermidis, P. vulgaris* and *K. pneumonia*. The results obtained from the antimicrobial activity showed that all the extracts exhibited different inhibitory activities against the different tested micro-organisms. In this study acute toxicity was
determined as per guidelines. It was also observed that there was no mortality in any of the dose up to 10gm/kg body weight. The administration of this plant material did not show any significant changes in the body weight, indicating that it did not have any adverse effects on body weighting. For behavioral changes and mortality all groups were almost continuously observed during first twenty four hours and then daily for a two weeks. No any abnormality detected in any of these groups.

5.6 Conclusion:

In the modern world, human depend upon various applied science branches. It needs to study the pure science for basic advanced research. In the last few centuries human totally faced challenged of many uncurable diseases. These types of diseases are occurred by environmental and artificial transformation.

Many researchers try to find out the medicines, but not get successful results to cure the diseases. The tribal people have the some sort of medicines to overcome the problem on uncurable diseases. For the getting the type of conserved and authenticate information, it is necessary collect from them. This unexplored knowledge will come to our civilization world from collecting the data in ethnobotanical survey.

This type of knowledge is helpful for innovative drug discovery. The observation and study of local practitioners, they search for the various uncontrolled diseases. This type of diseases will control by applying the various local weeds. These weeds occur in the civil society or abundantly found in the forest in the rainy seasons. For their health care tribals were still dependent on congenital knowledge, rendering a cheaper biological safe and alternative accessible to the elevated cost pharmaceutical cures. The potential gain of plant deduced medications constitute a honoring field of explore, in countries especially India in which plant resources have a rich biodiversity of matched with a elevated preponderance and form of infective diseases where of the biodiversity can be carried out by sustainable utilization. Thus to preserve the traditional knowledge of this plant resources endemic in this area proper documentation is important.

These types of plants collect and authenticate from authorized botanical agencies and try to find out the new compounds with various solvent systems. These polar to non polar solvents will extract sort of new compounds. This innovate the new drugs and this enormous store of
informations are being eroded as a result of human’s unsustainable action at present. The rapid changes are just as irreversible as the release of species, the release of traditional knowledge within culture undergoing. The various uses of plants before some of these plants are eliminated from the field, or earlier these inhabitant changes over to modern remedies; hence exertions should be made to document.

**How to use plant material as medicine:**

From fourth dimension immemorial, human beings has been in search for plants, animal and other material that could be used to take care of the pain, deformities, ailments and disease that affects approximately of the unfortunate person of our society members.

The medicine history can be associated with the upstage past. Though modern medicines, or allopathic, large portion has been accepted by the world population, for natural remedies there are new look in resent year, household remedies, and plant material using simple way which are hence easily accessible in one’s possess locality or in the vicinity.

The different properties were seen in different plant varieties that are contributory to physical condition. Formost beneficial consequence from the use of plants as curative authorities, they must have used systematically with an enough period of moment. Of course it is always advisable to consult Ayurvedic physician before self medicating or administering any herbal medicine. In fact it is highly recommended that after the reader makes an exact identification of the medicinal plant and has a clear and complete understanding of the plant that use that has been recommended in the book for a particular aliment, the Ayurvedic doctor should confirm the same. This will not only strengthen the psyche of the patient but will also reduce the chances of wrong diagnosis and treatment procedures.

Those who persist on using these plant remedies will obtain good results. The problem is that many people, when they experience the first improvement and some relief discontinue before the full work of restoration has been completed in the body. It is worth repeating that good results depend upon one’s own patience and the continued use of medicinal plants.

In natural conditions biotic and abiotic stress responsible for production of some important active metabolites in plant cells with huge diversity also applicable for plant defense and human therapeutic agents. In this biotic and abiotic stress which are manmade or due to physiological changes occur in the plant cells, mutation due to UV rays some carcinogenic agents which are very compiles variety.
In normal plant physiology whenever the cell suffers with other stresses they are automatically synthesis some compound mainly in the form for nitrogen bases. This type of agents is not only for the antimicrobial nature but also helpful for enzymes synthesis. If the infection occur on the plant then plant synthesis some compounds. Normal medicinal plants produces some important secondary metabolites which are toxic in nature mainly useful for antimicrobial and against the predators.

There are mainly major compound syntheses in plants from nitrogen and sulphur containing compounds mainly terpenoids and phenolics. These compounds are from the shikimic acid pathway which are commonly synthesis from the common amino acids. In recent trends of Biotechnology responsible for directly study the mechanism of plant physiological signals. In current trend in modern plant physiology some important compound like 100, 00 known secondary metabolites are involved in plant chemical defense system.

High production of secondary metabolites responsible for the resists more the resistant power of plant species. In recent trend biotechnology opening new opening for the ecology biochemistry. The organic compound responsible for plant growth and development through differentiation and fully developed plant species, but this vast dynamic organic compounds show direct effect for development. Besides primary metabolites the plant synthesis more compound mainly protection of plant species from environmental stress called secondary metabolites. Ayurveda is regarded as ancient science of life and is based on principle of maintaining the health of healthy person and relieving the patient from the diseased condition. Ayurveda is the science of health and healing practiced by ancient Aryans which is based on Atharvaveda, One of the oldest scripture of Hindus.

The technology involved in the extraction of Phytochemical of pharmaceutical significance is majority of the cases is the guarded secret of a pharmaceutical or chemical firm. An overall approach of the method of extraction of these Phyto pharmaceutical represent the coordination of research work carried out by scientist of different discipline. With analytical advancement in new technology and instrumentation technology in last three decades, it is been possible to devise commercial feasible technique for the extraction of several phytochemicals. Medicinal plant treated of a variety of human ailments has been immense. Since aeons, mah has been dependent on the higher plants as sources of food and medicines.
Nuclear magnetic resonance spectroscopy and mass spectroscopy have markedly reduced the time and efforts required for structural determination. These have also enabled structural production to be made by analysis of even much smaller amounts of isolated plant constituents than were previously required. The growing concern in the recent past over the toxic effects of various effects of various synthetic drugs has forced the researchers, academicians and doctors to consider some steps for preventing the misuse of such drugs. The uses of synthetic drugs are always feared during the treatment of chronic diseases, the occurrences of side effect after a long term. Such possibility be experienced to be of negligible extent in the case of other medicines alongwith herbal drug obtain on or after ordinary source. These are some of the reasons which led the authorities in this field to reconsider the use of herbal medicines and to give enough attention to the development of science of phytopharmaceutical and chemical industries and research institution throughout the world. As a result of modern isolation technique and pharmacological testing procedure, new plant drugs usually find their way into medicines as purified substance rather than in the form of older galenical preparation.

By the recent approval of several new plant derived drugs and synthetic drugs based on secondary plant metabolites, plants continue to be important sources of new drugs, as evident. The trade in medicinal plants and their derivatives in pharmacy have declined in many industrialized countries owing to the volume of competitive synthetic products currently marketed. The trade in plant products has increased following their increased use in the food and cosmetic industries.

At present, the United States is a major importer of medicinal plants amongst all the developed and developing countries. Japan is a major importer of medicinal plant among the Asian countries. The commerce in medicinal plants is prominent thought Asia, with many plant secondary metabolites.

**General rules to keep in mind:**

1. Flowers should be gathered before or after the flower unlock entirely. Collect them in clear and dry weather, early in the morning, after the dew has been disappeared.
2. Leave should be gathered when fully developed. Biennial plant leaves should be collected during the subsequent season of year, whenever they are stronger. Collect them in clear and dry weather, earlyin the morning, after the condensation has vanished.
3. In the case of stalks, collect them after fruiting occurs.

4. Gather bulbs after the new bulbs are completely formed and also earlierto the leaves  
   Decay takes place.

5. Gather the trunk, root, and bar or branch more over during the time of flowering or  
   when the fruit is ripened. Dead or Decaying material should be separated.

6. Seeds should collect when they are fully matured.

7. In the case of underground stems and root:
   
   A. Assemble annuals simply before flowering.
   
   B. collect biennials later on the beginning leave appear during the first season or at the  
   End of the year.
   
   C. Gather perennials either before new leaves begin to appear or after the plant mature  
   And the leaves have all fallen from the plant.

8. All drying should be done in the shade, especially the flowers and the leaves. Dry as quickly  
   as possible but thoroughly. Often when drying is complete a short exposure to the sun will help  
   to prevent fungus attack, always store in a cool and dry place. If the plant material is stored in  
   paper bags or boxes, be sure that each is correctly labeled for easy identification.

9. It should be noted that aluminum vessel should never be used for aqueous preparation of  
   herbs. Stainless steel, glass or wood quality enamelware is preferable. Pure soft water should be  
   used as far as possible.

   - Hot Infusion: Pour boiling water over the collected herb, steep for 15 minutes and strain.  
     This method is used for flowers and leaves to make a tea for use right away. It could also  
     be used for powdered bark, roots, seeds, or resins and also for bruised nuts, seeds, barks  
     or buds.
   
   - Cold Infusion: Steep in cold water for respective hours, strain, and use.
   
   - Decoction: Here the hard parts of the plants, such as twigs, roots, bark, rhizomes, berries  
     and some seeds are mildly simmered for about 30 minutes in water so as to release  
     properties, Strain earlier use.

10. Normal Dosages: Normally in preparation of the above, twenty grams of the fresh herb or  
   plants are used in one litre of water. However, if dried herbs are used, the amount of plants  
   material should be 10 grams.

   Normal Dosage For:
Adults: 4 or 5 cup a day.

Child:

Aged 9 to 15 years: 3 to 4 cups a day.
Aged 6 to 10 years: 2 cups a day.
Aged 2 to 6 years: 1 cup a day.
1 to 2 years: half cup a day.
Below one year: 1/4 or less cup a day.

A Useful Table for Quick Measurements:

<table>
<thead>
<tr>
<th>Unit</th>
<th>Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 tablespoon</td>
<td>5 grams (green herb)</td>
</tr>
<tr>
<td>1 dessertspoon</td>
<td>2 grams (dry herb)</td>
</tr>
<tr>
<td>1 teaspoon</td>
<td>25 drops</td>
</tr>
<tr>
<td>1 cup</td>
<td>16 tablespoon</td>
</tr>
<tr>
<td>1 litre</td>
<td>7 or 8 cups</td>
</tr>
</tbody>
</table>

This information is for those accustomed to strict obedience to exact dosages necessary in the use of pharmaceutical remedies. When one deals with herbs and plants, the dose does not need to be so precise since the natural remedies outlined in this book do not cause harm. A word of caution is always added when the material could cause some side effects. In the pages that describe the plants, very often you will notice that at the end of the description it will say: “Dose: normal”. This means you will have to use the above guidelines. For external uses, gargles, inhalations, and fomentations, the amounts used may be increased as necessary.

11. Juices: The juice of plants can be obtained without too much difficulty. The plant may be chopped, minced, crushed and then squeezed to extract the juice. A cloth may be used to extract the juice. Straining is also done in the same manner. The normal dosages are: Adults, five drops of juice in a tablespoon of water taken every three hours; children 10 to 15 years of years of age, three drops in a tablespoon of water every three hours; children 5 to 10 years of age, two drops in a tablespoon of water, every three hours; children 1 to 2 years of age, one drop in a tablespoon of water, every 2 hours. For younger child, less quantity of juice to be given in water for every 2 hour. Remember, a teaspoon contains approximately 25 drops. Juice must be used as soon as possible after it is extracted because it oxidizes very quickly, and its virtue declines rapidly. Never prepare juice for use the next day.
12. Powders: Herbs may also be taken in powder form if the powder is fine. The usual dosage in such cases is one quarter to one third of a level teaspoon. The powder is placed on the front part of the tongue and washed down with a glass of water. Be careful not to inhale the powder in to the lungs before it is washed off the tongue.

To make the powder the dried herb or plant may be ground in a mill or with a pestle in a mortar. It may be added to food, taken in capsule, or made into pill form.

13. Poultices (Cataplasms): Poultices made from plant material take on various forms:

   a. Fresh herbs may be applied directly to or over the pretended part, whether it is an
      Kindling wound or a painful region.

   b. Dry herb sachets, cold or hot, depending upon the need may be used for cramps,
      Neuralgia, obituaries, insomnia etc.

   c. Plasters are made by pounding or macerating the fresh herb until it is a homogenous mass
      that may be applied directly to the affected area. It may be applied directly or in a single
      thickness of clean, cotton cloth. If no fresh plants are available, then the dried herb may be used.
      This is prepared by soaking it in boiling water and using a sufficient quantity to enable the
      poultice to be made without excess fluid.

      Cold poultices have a cooling effect on swollen or inflamed areas and produce good results in
      neuralgia, contusions (bruises), sprains, rheumatism and gout. Hot poultices may be used with
      painful inflammatory conditions. In the preparation of poultices, use wooden spoons nonmetal
      ones especially if they are in contact with the material for any length of time.

   d. Compresses and fomentation may also be used. The former is applied cold and the
      fomentations are always hot. To make them take a clean cloth of sufficient size and immerse it in
      a strong decoction of the required herb or plant. This should about four times as strong as for tea.
      Wring out the folded cloth and place it over the affected part.

14. Ointment: This may be made by using suitable herbs. The herb or plant should be cut fine
    and a strong decoction made, or the plant itself may be added directly to the fat or oil used as
    base of the ointment. Suitable fats are: coconut fats, almond oil or any vegetable oil. Lard and
    petroleum jelly, while often used, are not desirable. Most fats, and especially oil, require the
    addition of a hardener. Beeswax is the choice, although, when not available, paraffin wax may be
    used.
Preparation: the decoction or plant is added to the base, fat, or oil and simmered until the moisture of the herb or decoction has been evaporated, which may take several hours. Strain while hot, and if necessary, add a little hardener. If the ointment is too soft, it may be reheated and more wax hardener added. Too much hardener makes the ointment difficult to apply. It may be made stronger if the herbs at first are strained out, and the processes repeated using more of the same herb. This may be repeated several times. Place in suitable containers to cool, until ready for use.

This type of biodiversity and traditional based system of medicines will conserve as early as possible from human unstoppable unnatural harvesting. This conservation takes place with the help of involving various biotechnological tools, tissue culture and synthesis chemical compounds by applying elicitors and precursors. This of type of research work focused on various aspects of pure science for innovation new drugs and helpful to sustainable supply of plant based drugs. The search of natural sources for novel bioactive molecules as potential drugs can be conducted through the ethnobotany and associated traditional knowledge; this is one of the most useful approaches to investigate plant species.

The constituents of plant part used in world wide for diseases treatment and some novel drug components are developed through research. For bioassay-guided fractional process contributing to the separation of active principles that may be developed into objective agents either as the natural product or a synthetically medication or a synthesized analog with heightened clinical action or reduced contrary side effects, in the advanced nation, high-output screening tests are used. There has been an antipathy by many members of the public and herbal remedy have proved to be popular as substitute or without research drug development is not possible, e.g. a need to eliminate common natural products such as tannins and saponins, despite the massive fund of clinical agent developed by the pharmaceutical industry. Biological screening procedure is prior for plant extract. A useful role in this area of research plays by Academic session. They can use selective targets and cooperate with industry. This type of research needs a multi-disciplinary approach and these include expertness in phytochemistry, they do not correspond industries in the broad range of concealment. Treatment of complementary diseases, there is a need to obey the protocol on the way to calculate the clinical trials by herbal treatments. Little of the world’s diverseness has been tested for biological activity; even natural productions of drug leading the single most productive origin. Encourages
in legal separation with analytical process that active compound can be described and isolated quickly from natural product extract.

Selection of plant for drug discovery may be accomplished through phyto-chemical testing; carrying bio-assays on experimental model, ethno botanical display and the plant report on biologic activity. Contempt the gain derived from plant, which may be concerned to over doses or other components some of which have some better side effect. To assure the therapeutically potential of medicinal and such plant for further drug improvement in the time to come, this may lead to death and actuate toxicity, but when such problem is addressed cautiously motivation assist.

The exploitation of nature as a source of bioactive products has been very successful with hundred of new drugs having been developed and marked. Despite the wide - ranging important of biodiversity components, the pledge enshrined in the convention on biological biodiversity still await more effective implementation in the form of research programs and partnership biodiversity rich countries. The present challenge is the establishment of integrative programs focusing on conservation, ecology, bioactivity, chemical analysis, crude synthesis and evolutionary studies in order that preserve realize and exploit the potential drop of biodiversity.

The need of some novel drug compounds such as lead compounds versus an increasing number of ever more challenging molecular assay targets. The natural product will be more relevant to chemical diversity for the future drug discovery. In the search for new drugs from these floras, especially in plants aboriginal to the state of Maharashtra, more expectant effort should be put option.

Main Objectives are as following:

- The intrinsic hepatotoxic effect shows by the clear study of this plant
- *Abutilon indicum* is an effective hepatoprotective agent at the dose (0.55g/Kg) used in the present investigation
- So, *Abutilon indicum* is non toxic plant and may be used as a medicine in liver disorder
- Rather than this leaves of *Abutilon indicum* may be used in treatment for ulcer, headache, bladder infection, pile complaints etc.