Aurangabad is the Divisional Head Quarter of the Marathwada region. The Aurangabad city was found in 1610 A.D. by Malik Ambar, The Prime Minister of Murtaza Nizam Shah of Ahmednagar on the sight of village called Khirki. Malik Ambar was succeeded by his son Fatheh Khah, Who Changed the name of Khirki to Fatethnagar. With the capture of Daulatabad by the imperial troops in 1633, the Nizam Shahi dominions including Fathnagar came under the possession of the Moghals. In 1653, when Aurangzeb was appointed the viceroy of the Deccan, he made Fatenagar his capital and called it Aurangabad. Since then the city to be known as Aurangabad. New Aurangabad divisional Head Quarter of the Marathwada occupies a place of pride in the history of India. Lying at the crossroads of ancient trade routes and nestled centrally in the Deccan plateau, Aurangabad has naturally been the since on which a great many “Cunning Passage” of the history have been enacted and unfolded. Endowed with a rich cultural past and a capacity for absorbing the shock and transformations of historical change into its own characteristic personality, the city occupies an important place on the tourist map of the world. The city is festooned all around with an amazing variety of monuments, such as rock-cut temples in the mountains ravines of Ellora and Ajanta, strategic forts such as the one at Daulatabad and mosques and mausoleums with their minarets and domes such as Bibi-ka maqbara.

A] TOPOGRAPHY

Marathwada region comprising of eight districts, viz. Aurangabad, Beed, Hingoli, Jalna, Latur, Nanded, Osmanabad and Parbhani. The location of Marathwada is on 70 5’ – 78 5’ E longitude and 17 5’ – 20 5’ N latitude forms the part of the vast Deccan plateau all of India and is one of the six divisions of Maharashtra State.

The total area of Marathwada region is of 64,813 km. and is bounded by the Vidarbha region on the north, by Andhra Pradesh on the east and southeast, by Karnataka on the south and by western Maharashtra on the west. The entire region is situated at an average height of about 300-650 m. above Mean Sea Level gradually sloping from west to east, and is traversed by hill ranges origination from the Sahyadris in the West and the Satpudas in the North. Different ranges derive their names from
local sources, the northern being Ajanta-Satmala ranges and the Southern the Balaghat ranges. In addition to these there are scattered hillocks of varying heights throughout the region, the highest peak, Surpal Nath (960 m. above MSL) situated near Kannad in Aurangabad.

B) GEOMORPHOLOGY AND SOIL TYPES

Geomorphologically the district comprises of varied topographic features and landscape consisting of high hills and plains and low lying hills. Most of the hill ranges are located in the northern part of the district .The Satmala hills and Ajanta hills extend from east to west .The Satmala hills and Ajanta hills extend from east to west. The hills near Verul in Khulabad taluka are part of these ranges which extend to chawaka ranges Aurangabad hills .The Satamala range encompasses several hills overlooking the Tapi valley. From west to east they are Antur (826 m amsl), The Satoda (552 m amsl), Abasgand (671 m amsl) and Ajanta (578 m amsl). The Satmala hill (493 m amsl) from which name of the range is derived is situated north to Kannad town.

Marathwada is a part of the Deccan Plateau. In General the slopes in the district are towards south and southeast. The average elevation of the district is in the order of 500 m amsl. Within it are flat topped hill ranges extending over wide area and also hills separated by broad valleys.

Major parts of the Aurangabad district falls in Godavari basin with a small area in north eastern parts falling Tapi Basin. The major river in the district is the Godavari with its tributaries namely; Purna, Dudhna and Shiva River. The other important tributaries are Suka, Khelna, Gulathi, Shivbhadra and Girija River. Depending on the drainage and geomorphology, the Marathwada has been divided into 52 watersheds.

Soil plays a very important role in the agriculture activities and forest growth of the area. The fertility of the soil from agriculture point of view depends upon the texture and structure which controls the retaining and transmitting capacity of moisture and various nutrients such as nitrogen, phosphorous and potassium present in the soil. The formation of the soil in the area is influenced by the climate, geology, vegetation and topography. The major part of the district is covered by black cotton soil or ‘Regur’ formed by weathering of Deccan Trap Basalt. It is rich in plant nutrient such as lime, magnesia, iron and alkalies on which cotton and dry crops like Jower, Bazara and tur etc flourish. It swells and becomes sticky on watering while on drying are contracts and develops many cracks. Soil varies both in texture and depth.
Deccan traps are a thick pile of basaltic flows, horizontally disposed and apparently more or less uniform in composition. Each individual flow is a typical section, which varies from porous weathered base to a massive middle unit. The geological formations of the regions are characterized by the Deccan traps (Upper cretaceous to lower Eocene). The granitic rocks have given rise to red as well as black cotton soils. Major part of the region has deep black soil derived from the trap rock. Certain variations occur due to exposure and protection. A mixture of laterite and black soil, for example, is encountered in the eastern parts together with sandy soil along river banks. Most of the hill tops are bare or covered by coarse gravel while the low lying area accumulates clay and loam.

C] AGRICULTURE AND LAND USE

Out of the total 64,30,371 hectare geographical land, about 22,32,279 hectare in under forest, 6,22,838 hectare is not available for cultivation comprising of non agricultural, barren and pasture land. About 23,182 hectare is a fallow land and about 27,92,072 hectare land is net sown area. On the basis of fertility status, the entire land of Marathwada can be classified into 5 zones, the most fertile zone being in the southern parts of Osmanabad, the medium fertile zone scattered in Beed, Nanded and Osmanabad districts and most unfertile zone being situated in the south western parts of Aurangabad district. Chemically the soils are below normal and alkaline in reaction. The pH range from 6.5 to 8.5 soluble salts as measured in terms of electrical conductivity are in normal range with an average E. C. of 0.3 – 0.67 mm hos/cm. Organic carbon content of most of the soils mostly low to medium. The phosphorus is within the medium range. Zinc available to the crops varies from 0.8 to 6.4 ppm. Thus, the soils in general, are rich in Calcium and Magnesium carbonates and are deficient in Nitrogen and Phosphorus. This chemical composition is mainly responsible for cracking of the soil during summer.

D] CLIMATE AND RAINFALL

The weather, in general, can be said to be dry and moderately extreme. The average day temperature ranges from 27.7\(^\circ\)C to 38.0\(^\circ\)C while it falls from 26.9\(^\circ\) to 20.0 \(^\circ\)C during night. Similarly summer and winter temperature also varies greatly. The highest during summer day being about 43.3\(^\circ\)C, while the lowest during winter nights about 6.0\(^\circ\)C. Relative humidity is extremely low for major part of the year (between 35
to 50%) while it is highest (85%) during monsoon. The rainy season is considered from middle of June to the end of September which is followed by a sultry period from about the end of September to the middle of November. The winter season commences from the middle of November and ends by the end of the January followed by a dry hot summer from February to middle of June. Summers are in general full of gusty winds. The normal average rainfall is about 90 cm but is rather variable from year to year. It has decreased considerable in the recent years. The major amount of South-West Monsoon precipitation is received on the West coast of India due to the Sahyadris and only a small amount escapes through high hills which are received by the Deccan Plateau. The region thus falls in the rain shadow of the Sahyadris.

E] FLORA AND FAUNA

The climate of Marathwada region is generally hot and dry. It receives low rainfall. Some part of Marathwada having good fertile land with climate, so this particular region shows ample bio-diversity. Other part of the region also shows its importance by producing medicinal and other useful plants. Due to the lack of adequate rainfall, vegetation cover shows its diversified nature. An Aurangabad and Nanded district covers more forest area than the others. There are Teak, Sandalwood, Anjan, Moh, Tembhurni, and other kinds of trees in these forests. In Aurangabad district, Gautala is a well known sanctuary, Jayakwadi is also famous for bird sanctuary. Thorny scrub forests are having major trees like Bor, Babul, and Aloe-voera etc. A variety of wild animals can be seen in the above said forests like wild Boars, Foxes, Hares etc. Leopards are seen but rarely. There are many Monkeys and Baboons in the Marathwada area. The animals like Buffalos, Cows, Sheep’s, Goats, Poultry animals, Fishes and prawns are cultivated in this region. The famous variety of goat from Osmanabad district and ‘Devni Walu’ in Oxen family from Latur district are famous varieties and these are one of the assets of Marathwada region. The major agricultural crops of the Marathwada region are Cotton, Oil seeds, Bajra, Jowar, Groundnut, Wheat, Safflower and irrigated crops like Sugarcane which is one of the important irrigated crops. The other irrigated crops like Grapes, Bananas, Sweet Limes and Oranges etc. are also grown in the soil of the Marathwada. In the soil of Marathwada region variety of vegetables like Brinjals, Tomatoes, Onions, Potatoes and Leafy vegetables are grown. The Marathwada region is spread over 64,813 Sq.Km having population of 1,56,29,248 souls with population density 241 souls/ Sq. Km (as per 2001 census).
Godavari is the main river in the Marathwada region. The region is divided into Upper Godavari basin, Lower Godavari basin, Bindusara, Manjra, Manad, Terna, Teru and Lendi are tributaries of Godavari and Sukhna rivers. In 1976. (Human Development Report 2002 - Maharashtra (India), Dr. Babasaheb Ambedkar Marathwada University History of Modern India, Bipin Chandra, Orient Blackswan, 2009). The detail of the Districts with area covers, population and forest cover is tabulated in Table – 1.

**Table – 1**

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Name of the District</th>
<th>Area in (Sq. Km)</th>
<th>Population(lakh)</th>
<th>Forest cover (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Aurangabad</td>
<td>10107</td>
<td>2897013</td>
<td>7.6</td>
</tr>
<tr>
<td>2</td>
<td>Jalna</td>
<td>07718</td>
<td>1612980</td>
<td>1.3</td>
</tr>
<tr>
<td>3</td>
<td>Parbhani</td>
<td>06517</td>
<td>1527715</td>
<td>1.53</td>
</tr>
<tr>
<td>4</td>
<td>Hingoli</td>
<td>04524</td>
<td>987160</td>
<td>5.99</td>
</tr>
<tr>
<td>5</td>
<td>Beed</td>
<td>10693</td>
<td>2161250</td>
<td>1.7</td>
</tr>
<tr>
<td>6</td>
<td>Nanded</td>
<td>10528</td>
<td>2876259</td>
<td>12.25</td>
</tr>
<tr>
<td>7</td>
<td>Osmanabad</td>
<td>07569</td>
<td>1486586</td>
<td>1.20</td>
</tr>
<tr>
<td>8</td>
<td>Latur</td>
<td>07157</td>
<td>280285</td>
<td>0.54</td>
</tr>
</tbody>
</table>
Indian sub-continent is a rich source of plant and animal wealth, which is due to its varied geographical and agro-climatic regions. Besides its varied biodiversity, it has a diverse cultural heritage too. Though at present Indian health care delivery consists of both traditional and modern systems of medicines, both organized traditional systems of medicine like Ayurveda, Siddha and Unani and unorganized systems like folk medicine have been flourishing well. Ayurveda and Siddha are of Indian origin and accounted for about 60% health care delivery in general and 75% of rural Indian population depends on these traditional systems. These two systems of medicine use plants, minerals, metals and animals as source of drugs, plants being the major source. It is estimated that roughly 1500 plant species in Ayurveda and 1200 plant species in Siddha have been used for drug preparation (Jain, 1987). In Indian folk medicine use, about 7500 plant species are recorded as medicinal plants (Anonymous, 1996). Though the Indian traditional systems of medicine are time-tested and practiced successfully from time immemorial, there is lack of standardization with regard to identity of crude drugs, methods of preparation and quality of finished products.

Textual variations exist among the innumerable literatures on traditional medicine on the constituents of a drug, methods of preparation and the names of medicinal plants. Multitude of vernacular names of medicinal plants found in the literatures pose problems in identifying the correct botanical names of medicinal plants and it is worst confounded with the use of different vernacular names, for the same plant, in different localities in the country. Standardization of herbal drugs is most desirable at this time when world-wide interest on herbal medicine has gained momentum. Besides lack of standardization, unscrupulous commercial practice of adulterating and substituting the genuine herbal drugs are posing great hurdle in popularizing the time-tested herbal-based traditional medicine. To achieve WHO's proclamation of "Health for all by 2000 AD" traditional medical systems have to be strengthened and popularized within the shortest possible time. Standardization of herbal medicine has the key to achieve this aim.

The term pharmacognosy is derived from two Greek words 'Pharmacon' meaning drug or medicine and 'gnosis' knowledge. C.A. Seydler first coined this term in his dissertation entitled 'Analecta pharmacognosia' in 1895. Pharmacognosy is closely allied to medicine, developed during early nineteenth century as a branch of Materia Medica and Applied Biology. It is a study of drugs having their origin in plant and animal kingdom. The subject pharmacognosy can also be expressed as an Applied Science that deals with biological, biochemical, therapeutic and economic features of natural drugs and their constituents. Tyler et.al. (1981) defined that in a broad sense, pharmacognosy embraces knowledge of the
history, distribution, cultivation, collection, selection, preparation, commerce, identification, evaluation, preservation and use of drugs and economic substances that affects the health of men and other animals.

In the earlier days, only the external morphological characters were used to identify a drug. As late as the beginning of the present century, pharmacognosy had developed mainly on the botanical side, being particularly concerned with the description and identification of drugs both in their whole state and in powder form. Modern aspects of pharmacognosy include not only the crude drugs but also their natural constituents and their derivatives.

Like other biological sciences, pharmacognosy has utilized related fields to bridge the transition from a descriptive science to a functional science. Various pharmacognostic methods are evolved to standardize crude drugs. Therapeutic efficacy of medicinal plants depends upon the quality and quantity of chemical constituents. It has been established that chemical constituents of a plant species vary with regard to climate and seasons (Tyler, et.al., 1981).

A plant species grown in different geographical localities also show quantitative variation in their chemical constituent (Mallavarapuet, et.al., 1995). Variation in biological compounds exists not only in species level but also in variety and cultivars levels too. Many varieties within a species might show variations in histological and phytochemical aspects. These differences exist among varieties of commonly occurred medicinal plants. These variations might be climatic, altitudinal, geographical or genetically in nature. Many varieties of medicinal plant species are found in nature. Though pharmacognostic studies on individual medicinal plants, their constituents and their efficacious have been undertaken, little work has been done on comparative analysis of the variations in morphological, Phytochemical and pharmacological aspects of varieties of medicinal plants. And to fulfill this gap, the present work is under taken with a view to analyze, similarities and dissimilarities in morphological, anatomical, microscopically, physicochemical. These plants are commonly available and medicinally useful in this geographical area and this study would form a foundation for understanding the pharmacological and therapeutical effectiveness of these varieties. Many efforts have been made to discover new antimicrobial compounds from various kinds of sources such as microorganisms, animals, and plants. One of such resources is folk medicines. Systematic screening of them may result in the discovery of novel effective compounds (Tomoko, et al, 2002).

Medicinal plants have been used as traditional treatments for numerous human diseases for thousands of years. Diarrhoal diseases continue to be a major cause of
morbidity and mortality throughout the world. Thus, their treatment by using medicinal plant is an important public health issue. Medicinal properties of plants are due to the active chemical constituents present in different parts of the plant (Mitscher, et. al., 1980). Even though pharmacological industries have produced a number of new antibiotics in the last three decades, resistance to these drugs by microorganisms has increased (Nascimento, et. a.l, 2000). According to WHO, medicinal plants would be the best source to obtain a variety of drugs. Contrary to the synthetic drugs, antimicrobials of plant origin are not associated with many side effects and have an enormous therapeutic potential to heal many infectious diseases.

“Phyto” is the Greek word for plant. There are many “families” of Phytochemical and they help the human body in a variety of ways. Phytochemical may protect human from a host of diseases. Phytochemical are non-nutritive plant chemicals that have protective or disease preventive properties. Plant produces these chemicals to protect itself but recent research demonstrates that many phytochemical can protect humans against diseases. There are many phytochemical properties in fruits and herbs and each works differently. The limited life span of antimicrobials due to resistance because of indiscriminate use necessitates the continuous search for alternatives. Awareness for misuse of antibiotics and also the potential risk of using synthetic form of phytochemical have been reported (Borris, 1996). Nature has been a source of medicinal agents for thousands of years and an impressive number of modern drugs have been isolated from natural sources, many based on their use in traditional medicine. Various medicinal plants have been used for years in daily life to treat disease all over the world. The use of traditional plant extracts as well as other alternative forms of medical treatments have, been getting momentum since the 1990. (Cowan, 1999). The medicinal use of plant species outnumbered (~10%) its use as food and feed (Moerman D.E., 1996). Traditionally common people use crude extracts of plant parts as curative agents (Mendoza, L., M. Wilkens and A. Urzua, 1997 and Sanches et al.). Plants with possible antimicrobial activity should be tested against an appropriate microbial model to confirm the activity and to ascertain the parameters associated with it.

Medicinal plants continue to be an important therapeutic aid for alleviating the ailments of humankind. The search for eternal health and longevity and for remedies to relieve pain and discomfort drove early man to explore his immediate natural surroundings and led to the use of many plants, animal products, and minerals, etc. and the development of a variety of therapeutic agents. Today, there is a renewed interest in traditional medicine and an increasing demand for more drugs from plant sources. This revival of interest in plant-
derived drugs is mainly due to the current widespread belief that “green medicine” is safe and more dependable than the costly synthetic drugs, many of which have adverse side effects. Nature has bestowed upon us a very rich botanical wealth and a large number of diverse types of plants grow wild in different parts of our country. In India, the use of different parts of several medicinal plants to cure specific ailments has been in vogue from ancient times (Bhattacharjee S.K, 1988). India is rich in medicinal plant diversity. All known types of agro-climatic, ecologic and edaphic conditions are met within India. India is rich in all three levels of biodiversity, as species diversity, genetic diversity and habitat diversity (Zafar, et.al., 1999). Scientific analysis of plant components follows a logical pathway. Plants are collected either randomly or by following leads supplied by local healers in geographical areas where the plants are found. Initial screening of plants for possible antimicrobial activities typically begins by using crude aqueous or alcohol extraction and can be followed by various organic extraction methods. Since nearly all of the identified components from plants active against microorganisms are aromatic or saturated organic compounds, they are often obtained through initial ethanol or methanol extraction (Vilegs, et.al.1997). Natural products are known to play an important role in both drug discovery and chemical biology. In fact, many of the current drugs either mimic naturally occurring molecules or have structures that are fully or in part derived from natural motifs (Cheesbrough, 2000). Natural antimicrobials can be derived from barks, stems, leaves, flowers and fruits of plants, various animal tissues or from microorganisms (Gordon M.C and David J.N, 2001). Although some therapeutic benefits can be traced to specific plant compounds, many herbs contain dozens of active constituents that, together, combine to give the plant its therapeutic value. Consequently, it is believed that the whole plant has more effective healing properties than its isolated constituents. Any part of the plant may contain active components (Nair R and Chanda S, 2004). For example, the roots of the ginseng plant contain the saponins and essential oils, while eucalyptus leaves are harvested for essential oils and tannins. Considering the aforesaid, it is assumed that the need of the hour is to search for new antimicrobials. With this in mind, in the present work, some selected plants are screened for their potential antimicrobial activity. A number of such studies have been done in various places of the world (Martinez, et.al., 1996). There are several reports on the antimicrobial activity of different herbal extracts (Samy and Ignacimuthu 2001, Shahidi Bonjar GH., 2004, Albinu et.al., 2007, Parekh J and Chanda S., 2007).

All human beings require a number of complex organic/inorganic compounds in diet to meet the need for their activities. The important constituents of diet are carbohydrates, fats,
proteins, vitamins, minerals and water (Indrayan, et.al. 2005). Every constituent plays an important role and deficiency of any one constituent may lead to abnormal developments in the body. Plants are the rich source of all the elements essential for human beings. There is a relationship between the element content of the plant and its nutritional status. Some elements are essential for growth, for structure formation, reproduction or as components of biologically active molecules while others have some other beneficial affects (New Wall, et.al., 1996). Qualitative or quantitative determination of mineral elements present in plants is important because the concentration and type of minerals present must often be stipulated on the label of a food. The quality of many foods depends on the concentration and type of minerals what they contains, also play a very significant role against a variety of degenerative diseases and processes, they may also prevent and reduce injury from environmental pollutants and enhance the ability to work and learn, some minerals are essential to a healthy diet (e.g. Calcium, Phosphorus, Potassium and Sodium) where as some can be toxic (e.g. Lead, Mercury, Cadmium and Aluminium). It is clear that mineral nutrition is important to maintain good health and because of that determination of As, Ca, Fe, Mg, Na, K, Zn, Ni, Co etc. have been added to Ayurvedic Pharmacopoeia of India (Anonymous, 1999). From ancient times, Swarnabhasma (gold ash) has been used in several clinical manifestations including loss of memory, defective eyesight, infertility, overall body weakness and incidence of early aging. Qualitative analyses indicated that Swarnabhasma contained not only gold but also several microelements Fe, Al, Cu, Zn, Co, Mg, Ca, As, Pb etc (Mitra et al., 2002). The physico-chemical analysis includes number of parameters such as physical state, colour, taste, percentage of loss on drying as per standard method of (Gupta, 1984 and The Indian Pharmacopoeia, 1996), ash content as per method of (Gupta, 2003 and Indrayan , et.al., 2005 ), ash value (water, alcohol and acid soluble or insoluble ash) as per method of (Ahmad and Sharma, 2001), pH value and conductivity(Sharma, and Kaur, 1998), Chloride and Sulphate(Trivedi and Goel, 1986). The eight inorganic elements (Ca, P, Mn, Zn, Ni, Fe, K and Mg) have been detected in B. monosperma, C. fistula, C. toona, T. cordifolia and Q. infectoria.

The product of the forest can broadly be divided into timber, fire wood and minor forest product (M.F.P). the M.F.Ps are minor because they do not fetchsizeable revenue to the government. However, for tribal population, in general, they not only provide them with extra cash but provide a major mean of sustenance. Medicinal plant constitute one of such
groups under M.F.Ps. Owing to the many factors, this resource, the medicinal products in the National and international markets.

Fluckiger states, “It is the simultaneous application of various scientific disciplines with the object of acquiring knowledge of drug from every point of view.”

Pharmacognosy may also be defined as “an applied science which deals with the biological, biochemical, and economic feature of natural drugs and their constituents.” It is a study of drugs having their origins in the plant and animal kingdoms.

In a broad sense, pharmacognosy embraces knowledge of history, distribution, cultivation, collection, selection, preparation, commerce, identification, evaluation, preservation and use of drugs and substance of economic importance affecting the health of man and other animals. Such economically important substances include a variety of commercial and medicinal products beside the crude drugs and their derivatives such as allergenic extracts, allergens, antibiotics, immunizing biologics, flavorings agents, condiment beverage, insecticides, rodenticides, and herbicides often requiring complicated methods of preparation. In a restricted sense the definition of pharmacognosy in a particular knowledge of method of identification and evaluation of drugs.

Method of collection, curing, drying, and assaying affect the quality and price of drugs; thus in so far as economic area is concerned, pharmacognosy is intimately associated with phases of pharmacy, administration, prescription, pricing, and quality control, with the knowledge of drug constituents and their physical and chemical properties a pharmacist is able to predict incompatibility in actual compounding.

Pharmacognosy deals strictly with those substance designated as drugs. According to the tariff classification of U.S. Government, the term drug means those substances, whether natural or synthetic, having therapeutic or medicinal properties and chiefly used as medicines or as ingredients in medicines.

Crude drugs are vegetable or animal drugs that consist of natural substance, and those have undergone no other processes other then collection and dried. The term “natural substance” according to the Tariff classification, refers to those substance found in nature and are comprised of whole plants and herbs or plants or parts thereof vegetable saps, extracts, secretion and other constituents therefore whole animals or internal parts therefore, glands, or other animal organs, extractions and other constituents and which have not had change made in their molecular structure as found in nature.

The chief function of pharmacognosist (Wallis, 1985) are six, viz. (1) To identify the source of material forming the drugs, (2) to determine its morphological nature, investigate its
potency, purity and freedom from admixture, (4) to devise methods of cultivation, (5) to prescribe details of processes of collection and preparation, and (6) to study the constituents of the drugs and investigate their chemical reaction.

The information on the drugs could follow following sequence:-

i) **Origin**, includes the biological and geographical sources the history and the name.

ii) **Cultivation and preparation**, Including details of cultivation of the plant, methods of collection, drying, packing and other processing of the drugs during its commercial preparation.

iii) **Characters**, includes the physical characters, such as dimension, surface character, fractures, etc. and the sensory characters such as odor and taste, Microscopic and histological characters must also be studies and are often of fundamental important.

iv) **Constituents and Tests**, Constituents includes both the reputed active constituents and also other constituents who may need careful consideration when devising process of extraction for the manufacture of galenicals or when studying compatibility in depending practice chemical tests of identity are based upon the nature of the constituents.

v) **Evaluation**, this involves quantities measurement of two types; the first is based upon the physical character and the second upon the constituents. The first delimits the inclusion of foreign organic matter, thickness of stalk, etc. and the second type delimits extractives yields to water or alcohol or other solvent etc.

vi) **Adulterants**, including material added fraudulently and also matter which has become associated with the drug owing to carelessness in handling during collection, packing and transport.

The present study aims to probe into such raw materials of plant origin and evolve methods for their identification.

Pharmacognosy is closely related to both botany and plant chemistry and its history entities it to be regarded as the parent of both. As late as the beginning of the present century pharmacognosy has developed mainly as a branch of botany, being particularly concerned with the description and identification of drug both in the whole state and in powder. Their history, commerce, collection, preparation and storage were also considered as a part of herbal study. Presently they are the pharmacogonostic branches having fundamental importance. However, the rapid development of plant chemistry and pharmacognosy in recent year has lead to an elaborate study of plants of medicinal important. In the particular,
many plants never previously examined are now being screened for possible pharmacological activity and for active constituents such as alkaloids, saponins, flavanones, tannins etc. considering the plant population of the world as a whole a small percentage of species has so far been examined.

The medicinally important plant taxa selected for the present study are:

1) *Butea monosperma* (Lamk.) Taub.- (Palas)
2) *Madhuca longifolia* (Koen.) Macbr. – (Mahua)
3) *Syzygium cumini* (Linn.) Skeel. (Jambul)
4) *Mimusops elengi* Linn. (Bakul)

1) *Butea monosperma* (Lamk.) - (Palas)

*Butea monosperma* (Lamk.) is an indispensable tree. Tribals use its flowers and young fruits. The plant is used in Ayurvedic, Unani and Siddha medicine for various ailments. Almost all the parts of the plant namely root, leaves, fruit, stem bark, flowers, gum young branches are used as medicine, food, fibre and for other miscellaneous purposes such as fish poison, dye, fodder, utensils, etc. About 45 medicinal uses are associated with the plant and out of these claims almost half the number of claims have been scientifically studied and reported. These observations are noteworthy for further studies on modern scientific lines. (Burli and Khade, 2007)

*Butea monosperma* is commonly known as Flame of forest, belongs to the family Fabaceae (Patil, *et al.*, 2006) It is locally called as Palas, Palash, Mutthuga, Bijasneha, Dhak, Khakara, Chichra, Bastard Teak, Bengal Kino and Nourouc and is common throughout India, Burma and Ceylon except in very acrid parts. Generally it grows gregariously on open grasslands and scattered in mixed forest. Plantations can be raised both on irrigated and dry lands. The pods should be collected and sown before the commencement of rains, root suckers are freely produced and help in vegetative propagation. In India, Palas ranks next to Kusum (*Schleicheria trijuga*) as a host tree for lac insect (Kirtikar and Basu, 1935; Kapoor, 2005). Almost all the parts of the plant are being used since decades in medicine and for other purposes. These days herbal medicines are more popular than modern medicine because of their effectiveness, easy availability, low cost and for being comparatively devoid of side effects. Nature always stands a golden mark to exemplify the outstanding phenomenon of symbiosis and it has provided the storehouse of remedies to cure all ailments of mankind, only the thing is that there is a need to evaluate them scientifically. *Butea monosperma* (Lam.) Kuntze is one among four species belonging to the genus Butea Koenig, three species
of which occur in India (Anonymous, 1988). It holds an important place because of its medicinal and other miscellaneous uses of economic value. Bark fibers are obtained from stem for making cordage (Kirtikar and Basu, 1935). Stem bark powder is used to stupefy fishes. Young roots are used for making ropes (Anonymous, 1988). Green leaves are good fodder for domestic animals. Leaves are used for making platters, cups, bowls and beedi wrappers (Anonymous 1988 and Ambasta, 1994). Leaves are also used for making Ghongda to protect from rains and are eaten by buffaloes and elephants. Tribals use flowers and young fruits as vegetables. Flowers are boiled in water to obtain a dye (Patil, 2006). Orange or red dye is used for colouring garments and for making skin antiseptic ointments (V.S. Agarwal,). Fresh twigs are tied on horns of bullocks, on occasion of ‘pola’ and dry twigs are used to feed the sacred fire (Patil, et.al, 2006). In addition wood of the plant is mainly used for well-curbs and water scoop. It is also employed as a cheap board wood and for structural work; wood pulp is suitable for newsprint manufacturing (Ambasta, 1994).

Flowers are astringent to bowel, increase “Vata” cure “Kapha”, leprosy, strangury, gout, skin diseases, thirst, burning sensation; flower juice is useful in eye diseases. Flower is bitter, aphrodisiac, expectorant, tonic, emmenagogue, diuretic, and good in biliousness, inflammation and gonorrhoea. The dye is useful in enlargement of spleen. Flowers are depurative, as a poultice they are used to disperse swelling and to promote menstrual flow. They are given to pregnant women in case of diarrhoea. It is also useful to prevent pus from urinogenital tracts of males. Flowers are crushed in milk and sugar is added, 3-4 spoons if drunk per day for a month helps to reduce body heat and chronic fever. Flowers are soaked in water overnight and a cup of this infusion is drunk every morning against leucorrhoea till cure (Patil, et.al., 2006).

Kasture, et.al., (2005) reported effect of flowers in memory and behaviour mediated via monoamine neurotransmitters. The acetone soluble part of petroleum ether and ethanolic extract exhibited nootropic activity in the elevated plus maze paradigm and active avoidance learning. (Mishra, et.al., 2000), reported the presence of flavonoids in ethyl acetate fraction of methanol extractives. Phytochemical investigations of the dried flowers of Butea frondosa Roxb revealed the presence of at least seven flavones and flavonoid constituents including butrin and isobutrin and also four free amino acids. Purified alcoholic extract at lower dose level and ether and water extracts at higher dose level have been found to exhibit significant antiestrogenic activity in immature mice, while ethyl acetate extract containing butrin and isobutrin exhibited poor activity. Significant inhibition of uterus weight gain, vaginal
epithelium cornification and characteristic histological changes have been observed. (Shah, et al., 1990). Gupta, S.R.(1970) Carried out a reinvestigation of the flowers of Butea monosperma and revealed the presence of seven flavonoid glucosides. Two of them are butrin and isobutrin, which have been isolated earlier from the plant. Three glucosides have been identified as coreopsin, isocoreopsin and sulphurein. The remaining two are new and have been assigned the structures (monospermoside) and (isomonospermoside) (Rastogi and Mehrotra, 1979). (Shah et al., 1992) isolated and identified free sugars and free amino acids from the petroleum ether extract of flowers.

Powdered seeds are consumed by children as remedy against intestinal worms. Seeds are crushed in milk and this mixture about 2 spoons is taken orally to treat urinal complaints and also against urinary stones. Fruit and seed are digestible, aperient, cure ‘Vata’ and ‘Kapha’, skin diseases, tumours, and abdominal troubles and as per Ayurveda are given for Scorpion-sting. Fruit and seed are useful in piles, eye diseases and inflammation. When pounded with lemon juice and applied seeds act as powerful rubefacient and they have been successfully used in curing a form of herpes, known as Dhobie’s itch (Patil, et al., 2006.)

Leaves are good for the disease of the eye. Leaf is an appetizer, astringent, carminative, anthelmintic, aphrodisiac, tonic, lessens inflammation and lumbago, cures boils and piles. Petiole is chewed and the juice is sucked to cure cough, cold and stomach disorders. Leaf powder about 2 spoons per day for a month is drunk mixed with a cup of water to cure diabetes. Leaf extract is used as gargle in case of sore throat. Leaf extract about 3-4 spoons is drunk at night for 2-3 months. It checks irregular bleeding during menstruation (Patil et al., 2006 and Kirtikar and Basu, 1935).

(Bodakhe and Ahuja 2004) reported in-vitro lens protective and antimicrobial activity of roots. Stem bark powder is used to apply on injury caused due to axe. Stem juice is applied on goitre of human being. Paste of stem bark is applied in case of body swellings. Bark is acrid, bitter, appetiser, aphrodisiac, and laxative, anthelmintic, useful in fractures of the bones, diseases of the anus, dysentery, piles, hydrocele, cures ulcers and tumours. Bark is useful in biliousness, dysmenorrhea, liver disorder, gonorrhoea and it also purifies the blood. The ash of young branch is prescribed in combination with other drugs in case of scorpion sting (Patil, et al; 2006). (Savitri, et al., 1989) reported antifungal constituents from petroleum and ethyl acetate extracts of stem bark. Extract exhibited significant antifungal activity against C. cladosporiodes. (Sharma, et al., 2005) reported antidiarrhoeal potential of ethanolic extract in castor oil induced diarrhoea model, PGE2 induced enteropoolingin in rats. Extract also reduced gastrointestinal motility after charcoal meal administration.
(Suguna, et.al., 2005) investigated the effect of alcoholic bark extract on cutaneous wound healing in rats. Excision wounds were made on the back of rat.

A clinical trial of the plant in worm infestation proved its effectiveness in cases of round worm and thread worm infestations and the drug was found to be ineffective in the only case of tapeworm infestation. (Agarwal, et.al., 1994) reported use of “Ayurvedic Rasayana” (herbal medicine) containing Butea monosperma in the management of giardiasis perhaps by immunomodulation as the “Rasayana’ did not exhibit killing effect on the parasite in-vitro. Certain plants, which reportedly have significant antihelminthic/antifilarial effect in traditional usage, were screened in vitro for their antimicrofilarial activity against Brugia malayi. (Joshi, 2000).

Roots of Butea monosperma are reported to be useful in the treatment of filariasis, night blindness, helminthiasis, piles, ulcers and tumors. Pippali rasayana, an Indian Ayurvedic drug, employs Butea monosperma and is used in the management of giardiasis (Agarwal, et.al., 1997).

The bark is reported to possess antitumor and antiulcer activities. The root bark is used as an aphrodisiac, analgesic and antihelmintic whereas the leaves possess antimicrobial property (Kasture, et.al., 2000). Butea monosperma flowers contain butin, butein, butrin, isobutrin, palasitrin, coreipsin, isocoreipsin, chalcones, and aurones (Gupta, et.al., 1970). Butrin (7, 30, 40- trihydroxy.avanone-7, 30-diglucoside) and isobutrin (3, 4, 20, 40-tetra-hydroxy-chalcone-3, 40-diglucoside) are the well-known antihapatotoxic principles of B. monosperma (Wagner, et.al., 1986). Gum is useful as astringent, depurative and useful in diarrhoea, haemorrhoids, haemoptysis, haematemesis, leprosy, skin diseases (Agarwal, et.al., 1997 and Kasture, et.al., 2000). In some tribes (Banjara) from Maharashtra (India), gum of Butea monosperma is used to treat microbial and fungal infections (Vaidyaratnam, 1995).

2) Madhuca longifolia (Koen.) Macbr. – (Mahua) / (Syn. Madhuca indica)

Morphological characters of Madhuca longifolia are described in various floras and treatises of medicinal plants. (Mukerji, 1953; Anonymous, 1962; Gamble, 1967; Giles Lal and Livingstone, 1978; Kurup et.al., 1979; KirtiKar and Basu, 1980; Mathew, 1983; Henry, et.al., 1987 and Jain, 1996). The two varieties show variation in the color of the bark, number of anthers and seeds. However, there is no conformity in the descriptions of these characteristic features in the various treatises. Bark of colour Bassia latifolia is described as gray colored and that of Bassia longifolia as dark yellowish gray in (Gamble, 1967).
Anatomical characters of the members of the family Sapotaceae are described by (Metcalfe and Chalk, 1957). Bishayee and Bhattacharya (1992) studied the plants associated with Madhuca sp., in Birbhum district of West Bengal. Literature on Siddha medicine mentions 3 types of 'Illuppai' (Tamil vernacular name for Madhuca sp.) namely 'Illuppai', 'Seemaillupai' (exotic) and 'kaattuilluppai' (wild) (Prema, 1989). Madhuca sp. is medicinally and commercially useful. The plant parts like stem bark, corolla lobes, seeds and seed oil are used in diabetes, burns, scalds, bronchitis, rheumatism, cough, piles, galactagogue skin diseases, tonsillitis, stomach-ache, aphrodisiac and respiratory diseases and have laxative, insecticidal and pesticidal properties (Mukerji, 1953; Chopra et.al.,1956; Anonymous, 1962; Kurup et.al., 1979; Kirtikar and Basu 1980; Anonymous, 1986;). According to Tribal Co-operative Marketing Development Federation of India Limited, the production of oil from seeds of 'Mahua' is 171 MT/year in India (Joshi, 1993).

The oil of Madhuca sp. contains oleic acid, palmitic acid, linoleic acid and myristic acid; seeds contain morwin (Mukerji, 1953). Triterpenoids are identified from seed kemals nut shells and fruits and in trunk barks (Awasthi and Mitra, 1968) Madhuca longifolia Flavonoids are isolated from fresh leaves (Subramanian and Nair, 1972) saponins from defatted seeds (Harihara, et.al., 1972) and leaves (Banerji, et.al., 1985) and sterols from seed oil (Bhargava and Singh,1958; Singh, 1959) of Madhuca longifolia Bhatnager, et.al., (1972) identified triterpene esters and oleanolic acid and palmitate from leaves and Kitagawa, et.al., (1978) identified a 'Mi saponin C' from seed kernels of M. longifolia. Chemical and biological aspects of polysaccharides from flowers of Madhuca indica are reported by Rao (1992).

The fluoride content in fruits of Madhuca longifolia is estimated to be 0.2 ppm (Nandha, 1972). (Daniel, et.al., 1978) quantified the tannins (4.86%) in leaves. (Atal, et.al., 1978) found that the extract of stem bark of Madhuca longifolia have anti-insecticidal property against housefly. Oil of Madhuca sp. has anti-insecticidal activity against Callosohruchus cinensis (Chander and Ahmed, 1986 and Ali, et.al., 1983) and Callosohruch macultatus (Jadhav and Jadhav, 1984). The oil is also active against Meloidogyne incognita (Lanjewar and Shukla, 1986) and for common pests of various crops and ornamentals (Sounderrajan and Nimbisan, 1993).

Seed oil of Madhuca latifolia is inactive against Marophomia phaseolina in cowpea (Ratnoo and Bhatnagar, 1993) and seed kernal is inactive against yellow mosaic virus in black gram (Mariappan et al., 1987). Stem bark extract of Madhuca indica is inactive against Ranikhet disease virus and vaccinia virus. (Bhakuni, et.al., 1969).
Stem bark extract of *Madhuca indica* is inactive against *Bacillus subtilis, Staphylococcus aureus, Salmonella typhi, Escherichia coli* and *Agrobacterium tumefaciens*. It has no antifungal properties against *Candida albicans, Cryptococcus neoformans, Trichophyton mentagrophytes, Microsporum canis* and *Aspergillus niger*. (Bhakuni, et.al., 1969). The methanolic extracts of flowers, leaves, stem and stem bark of *M. longifolia* have been reported to possess antibacterial activity against *Bacillus anthracis, B. pumilus, B. subtilis, Salmonella paratyphi, Vihrio cholerae, Xanthomonas campestris* and *X malvacearum* (Trivedi, *et.al.*, 1980). Pasmer and Datta (1988) reported that the oil of *M. latifolia* has synergistic action with Malathion. (Alam, *et.al.*, 1984). Studied the micro flora of corolla lobes and found that the microbe responsible for fermentation is from external sources. 50% alcoholic extract of stem bark of *Madhuca indica* reveal hypertensive activity and devoid of diuretic and anticancer property and LD 50- was 1000 mg/kg i.p. in albino mice. (Bhakuni, *et.al.*, 1969). Seed saponins of *Madhuca longifolia* are reported to have spermicidal activity at 2.0% concentration (Shetty, *et.al.*, 1976) and anti-inflammatory property (Yamahara, *et.al.*, 1979). However, (Banerji, *et.al.*, 1979) reported that seed saponin of *Madhuca latifolia* has spermicidal activity at 0.03% concentration. Seed saponin has no effect on cardiovascular activity and haemolytic activity (Banerji *et.al.*, 1981) but have cholinergic activity (Mulkhy and Gandhi, 1977). Leaf saponins are found to have no spermicidal or spasmytic activity (Banerji, 1985).

Historically mahua has been the single largest indigenous source of natural hard fat in soap manufacture both by the small scale and organized sector. However the quality of fat available do not commensurate the requirement. White mahua fat is satisfactory for production of washing soaps, its utility as virgin fat in toilet soap manufacture is limited because the soap turns rancid and occasionally acquires a pink colour on storage.

Seed Oil is used as ointment, in rheumatism and to prevent crack in the skin in winter. It is used for edible purposes culinary, hair oil, illumination, lighting, keeps body glossy and warm.

Madhuca flowers are useful in bronchitis and coughs. They should be given in doses of 30 grams with 250 ml of milk. Vapors of boiling Madhuca leaves are useful in relieving the pain of orchitis or the inflammation of testicles. A decoction of the bark can be given internally in rheumatic diseases. The oil extracted from the seeds can also be applied locally on the affected area. A decoction of the bark can also be taken in diabetes mellitus with beneficial results. The oil extracted from the Madhuca seeds has laxative properties. It helps cure piles by relieving chronic constipation. The leaves of the tree are useful in the treatment
of eczema. The leaves, smeared with sesame oil, warmed over a fire and bandaged on the affected parts provide relief. They should be changed after every 3 to 4 hours. A lotion is made by mixing 4 ml of the liquid extract of the bark of the Madhuca tree with 300 ml of water is an excellent gargle for bleeding and spongy gums. This lotion can also be used as a gargle in the treatment of acute and chronic tonsillitis and pharyngitis. The ash of the leaves, mixed with ghee, is often used as a dressing for burns and scalds in the indigenous system of medicine. For the cure of itching, a paste of the bark is applied locally. The oil extracted from the seeds can also be applied locally in skin diseases. Flowers of the Madhuca are effective in increasing the flow of milk in nursing mothers. The seeds also have a similar property.

3) Syzygium cumini (Linn.) Skeel (Jambul):

Syzygium cumini showed an antimicrobial effect against enteric bacteria antibacterial activity. (Perez and nesini, 1994; Rani and Khullar, 2003; Alanis, et.al, 2005)

Syzygium cumini extracts possess a broad spectrum of activity against a panel of bacteria responsible for the most common bacterial diseases. These promissory extracts open the possibility of finding new clinically effective antibacterial compounds. (Bajracharya et.al., 2008)

The Jambul Fruit is a well-known common fruit. It has two varieties. The big one is oval in shape and is commonly called as Suva-jamun. The small one is round in shape and is commonly called as kutta-jamun. The bigger variety is sweeter than smaller one. The fruit is a juicy berry with a single stone. It is black outside and violet inside, has a sourish sweet pulp and greenish yellow seed. In some countries, it is also named as Java Plum or even Rose apple.

The jambul fruit is regarded in traditional medicine as a specific against diabetes because of its effect on pancreas. The fruit as such, the seeds and fruit juice are all useful in the treatment of this disease. The seeds contain glucose Jamboline which is believed to have the power to check the pathological conversation of starch into sugar in cases of increased production of glucose. They are dried and powdered. This powder in doses of three grams should be given three or four times a day mixed in water. It reduces the quantity of sugar in urine and allays the unquenchable thirst.

In Ayurveda, the inner bark of jambul tree is also used in the treatment of diabetes. The bark is dried and burnt, which produces an ash of white color. This ash should be pestles
in the mortar, strained and bottled. The diabetic patient should be given 65mg. of this ash on an empty stomach with water in the morning and 135mg. each time in the afternoon and in the evening, an hour after meals, if the specific gravity of the urine is 1.02 to 1.03. If the specific gravity ranges between 1.035, the ash should be given thrice daily in the quantity of about 2gm.at a time.

Myrtaceae is a plant family widely used in folk medicine in different countries and *Eugenia* and *Syzygium* are among its most important genera. Species of this family are often used for several medicinal purposes, including the treatment of diarrhea and pain (Caceres, *et al.*, 1993). Experimental data also suggest the action of these species on inflammatory processes, respiratory diseases (Muruganandan, *et al.*, 2001), and allergic disorders (Kim, *et al.*, 1998). The seeds have been reported to be useful as astringents in diarrhea as well as dysentery (Chopra, *et al.*, 1958). Other parts of the plant have been reported to possess anti-diabetic (Chakraborty, *et al.*, 1986).

The presence of polyphenols, gallic acid, ellagic acid derivatives (Timbola and Szpoganicz, 2002), tannins (Son K, *et al.*, 1998), and glycosylated flavonoids (Timbola, *et al.*, 2001) has been reported in *Syzygium* species. We extended the previous observation that *Syzygium Cumini* leaf extracts contain flavonoids (Timbola, *et al.*, 2002 and Ramirez RO, Roa CC Jr, 2003). Showed a correlation between the anti-inflammatory activity and the content of the total phenolic compounds in the extracts of *Cumini*. Our results on the antiedematogenic effect of the *Syzygium Cumini* extract also support the earlier observation of (Slowing, *et al*1996).and (Middleton, 1998) that the presence of flavonoid glycosides may be associated with the anti-inflammatory activity of a methanol.

*Syzygium cumini* Skeels (or *Eugenia jambolana*) belonging to the family of Myrtaceae is a large evergreen tree. It has been valued in Ayurveda and Unani system of medication for possessing variety of therapeutic properties. Most of the plant parts are used in traditional system of medicine in India. According to Ayurveda, its bark is acrid, sweet, digestive and astringent to the bowels, anthelmintic and in good for sore throat, ronchitis, asthma, thirst, biliousness, dysentery, blood impurities and to cure ulcers (Kirtikar and Basu, 1975). In Unani medicine system the ash of leaves is used for strengthen the teeth and the gums, the seeds are astringent, diuretic, stops urinary discharge and remedy for diabetes and the barks showed good wound healing properties (Nadkarni, 1954). *Syzygium cumini* is a medicinal plant, whose parts were pharmacologically proved to possess hypoglycemic, antibacterial, anti-HIV activity and anti-diarrhea effects. (Bhuiyan, *et al.*, 1996; Kusumoto,

The fruits of this subtribe are often described by their bright anthocyanin colors, including orange, red, purple and black (dark purple). They are sweet to tart, aromatic and many are astringent, indicating the presence of tannins. The taste is often described as somewhat acid. New shoot growth for many species is wine-colored (Facciola, 1998; Popenoe, 1920).

Other fruits in this sub tribe are also colorful, with an extensive ethnobotanical and ethnomedical use that suggests possible flavonoids content. S. jambos fruit is used as a tonic for the brain and for liver problems, as an astringent, and digestive and diuretic (Kirtikar & Basu 1988; Morton, 1987). The leaves contain seventeen different flavonoids (Constant, et al., 1997; Slowing, et al. 1996; Slowing, et al., 1994) and are used as an anesthetic, anti-inflammatory, and astringent, for apoplexy, asthma, bronchitis, cough, diabetes, dysentery, influenza, and rheumatism (Rivera & Obón, 1995). S. samarangense, which is cultivated in India for its edible fruit (Anonymous, 1952) contains two flavonol glycosides as well as epigallocatechin 3-O-gallate, epicatechin 3-O-gallate, and samarangenin A and B (Harborne and Baxter, 1999). In Taiwan, the flowers, which contain tannins, are used to treat fever and halt diarrhea. Flowers also contain desmethoxymatteucinol, 5-O-methyl-4′-desmethoxymatteucinol, oleanic acid and b-sitosterol (Morton, 1987). The jaboticaba (Myr- ciaria cauliflora) is a popular edible in Brazil, much like grapes in the U.S. (Popenoe, 1920). They are a dark red to maroon-purple and black, and are used to make jam, tarts, strong wine and a liqueur (Facciola, 1998).

4) Mimusops elengi Linn. (Bakul):-

Mimusops elengi belongs to the family Sapotaceae. It is an evergreen tree, 5-8 m tall and is cultivated throughout our country as an ornamental tree. The bark is used as a gargle for odontopathy, ulitis and ulemorrhagia. Fruits are used as astringent, coolant and anthelmintic. The tender stems are used as tooth brushes, and in cystorrhea, diarrhea and dysentery. The seeds are used in constipation (Nair and Chanda, 2007). Due to the fact that the plant Mimusops elengi is very useful, as found by above mentioned reports and the fact that little information cited in the literature (. Nair and Chanda, 2007; Hazra, et al., 2007, S. Muid, 1996, and Sahu, et al., 2001).
Preliminary phytochemistry investigation and antimicrobial activity of fruit of *Mimusops elengi* Linn. Acetone extract of fruit of *Mimusops elengi* proved to have broad spectrum antimicrobial activity at 250mg when compared with that of chloramphenical (100mg) against the entire organism isolated from the tooth tarter of dental patients.

Chemistry and biology of the triterpens and Saponins from Seeds of Mimusops plants the triterpene, Mimusops acid, possessing the novel migrated oleanane skeleton, Mimusopane, exhibits anti HIV reverse transcriptase activity and modifications of this novel compound may lead to more potent bioactive substance. The Saponins present also demonstrated to be antifungal against some human pathogens. Sahu, *et al.*, (2001).

Different solvent extracts of bark, fruits (fleshy portion) and leaves of *Mimusops elengi* were screened for their antibacterial and antifungal activities against some pathogenic bacteria and fungi. (Abbas Ali 2008), the activities of the extracts were not significantly enough against most of the tested organisms. Fruit extracts were less potent against most of the tested organisms compared to those obtained from bark and leaves and were inactive against the fungus *Trichoderma viride*. Leaves extracts displayed good activity against *Bacillus subtilis* and *Trichoderma viride* and were inactive against *Helminthosporium sativum*. This study may be a lead for further ethnopharmacognostic investigation to identify new compounds with therapeutic promise.

*Mimusops elengi* is used in the indigenous system of medicine for the treatment of various ailments. Several therapeutic uses as cardiotonic, alexipharmic, stomachic, anthelmintic and astringent. (Kirtikar and Basu, 1935). Phytochemical review shows the presence of taraxerol, taraxerone, ursolic acid, betulinic acid, V-spinosterol, W-sitosterol, lupeol, alkaloid isoretronecyl tiglate and mixture of triterpenoid saponins in the bark of *Mimusops elengi* (Varsheny and Badhawar, 1972).

The study was to evaluate an eminint potential of crude alcoholic extract of bark of *Mimusops elengi* (Mali, *et al.*, 2007).

Phytochemical analysis of the crude extracts revealed the presence of tannis among the other chemical constituent contained within them. Tannins were shown to produce anthelmintic activities. (Niezen, *et al.*, 1995). Chemically tannins are polyphenolic compounds (Bate and Smith, 1962). Some synthetic phenolic anthelmintics e.g. niclosamide, oxyclozanide, bithionol etc., are reported to interfere with energy generation in helminth parasites by uncoupling oxidative phosphorylation (R.J.Martin, 1997). It is possible that tannins contained in the extracts of *Mimusops elengi* produced similar effects. Another
possible anthelmintic effect of tannins is that they can bind to free proteins in the gastrointestinal tract of host animal (S.Athnasiadou, et.al., 2001).

*Mimusops elengi* is a wild plant distributed in tropical and subtropical region. The fruits are used in chronic dysentery, constipations; flowers are used as snuff to relieve headache, lotion for wounds and ulcers. Barks are used to increase fertility in women and known to have antiulcer activity (Shah, et. al., 2003). They are rich source of tannin, saponin, alkaloids, glucoside, and ursolic acid (Anonymous, 1969). A pentacyclic triterpene 3β, 6β, 19α, 23-tetrahydroxy-urs-12-ene reported from bark recorded moderate inhibiting activity against β– glucuronidase enzyme associated with gastric ulcers (Jahan, et. al., 2001). Seeds of *Mimusops elengi* is known to contain several saponins such as mimusin misaponin A and 16α-hydroxy Mi-saponin A (Sahu, et.al., 1997), taxifolin, α- spinasterol glucoside, Mi-glycoside 1, mimusopside A and B (Sahu, 1996). Seed kernel also reported to have saponins (Lavaud, et. al., 1996).