REVIEW OF LITERATURE
Traditional medicine is widely used by many people in India who still incorporate herbal medicine in their daily existence. The plants that are used in traditional medicines are likely and in some cases already known, to contain pharmacologically active compounds. For this reason, medicinal plants have become the focus of intense study in recent years to determine whether their traditional uses are supported by actual pharmacological effects or are merely based on folklore. With the increasing acceptance by Western health-systems of traditional medicine as an alternative form of health care, there is an urgent need for an evaluation of traditional methods of treatment. Considerable importance has been placed on the screening of medicinal plants for active compounds.

Ethnomedico-botany focuses on the knowledge of medicinal plants that people have developed over generations. The World Health Organisation estimates that as many as 80% of the world’s population depend on plants for their primary healthcare (Farnsworth et al., 1995).

India is one of the World’s 12 regions having the largest biodiversity. It has about 45000 plant species of which 15000-20000 possess proven medicinal value (Krishna Kumar, 1996).

In India, ethnomedico-botanical surveys and inventories receive little attention and detailed information and documentation on the uses of medicinal plants in indigenous communities are lacking. This disinterest in the existing knowledge and wanton neglect by authorities and public slowly result in the loss of this knowledge. It is high time that effective measures and programmes are adopted to save this information before it is lost for ever. To prevent this ethnomedico-botanical surveys in each district are needed (Arora, 1997). Comparing and cross-checking the results will
provide us with information about herbal medicines presently in use. Furthermore, concerted efforts are needed towards the usage of plant resources, linking conservation strongly with utilisation.

To understand and encourage indigenous systems of healthcare should not be viewed as a potential threat to modern medicine. No system is faultless and each has positive aspects. An amalgamation of the different systems is needed to foster a sound national health policy, collaboration between indigenous medical systems. The lack of communication between indigenous medical systems is a major reason that these systems are not able to convince the world of its rich traditions and sound principles.

Indigenous medical systems are relying on crude herbal drug preparations. Modern analytical methods are to be adopted and subject the drugs to enhance quality control. It is not possible to compare herbal drugs with chemical ones because most of the herbal medicines are mixtures of numerous chemical molecules. But it is necessary to develop standard specifications for herbal medicines by indicating the ingredients, the amount and range of the active principles, their therapeutic properties, etc. Better methods to improve the shelf life can be achieved with the aid of modern analytical instruments (Natesh, 1997). Products of improved quality will certainly help a large section of the population that depends on traditional products. Perhaps India may be even able to sell such products in the western market (Bhatia, 1997).

In India, medicinal plants are widely used by all sections of people either directly as folk remedies or in different indigenous systems of medicine or indirectly in the pharmaceutical preparations of modern medicines. According to National Health Experts, 2000 different plants are
used for medicinal preparations for both internal and external use in India alone. Among them only 200 are of animal origin, and 300 of mineral origin, while 1500 drugs are extracted from various plants.

Rigveda mentions 67 plants having therapeutic effects, Yajurveda lists 81 plants and Atharveda 290 plants (Nabachandra and Manjula, 1992). The world health organization recently compiled an inventory of more than 20000 species of medicinal plants. Indian medicinal plants and their products are used to control diverse disease such as catarrh, bronchitis, pneumonia, ulcers and diarrhoea. Researchers are increasingly turning their attention to folk medicine looking for new leads to develop better drugs against cancer, as well as viral and microbial infections (Galal et al., 1991; Hoffmann et al., 1993). Although hundreds of plant species have been tested for antimicrobial properties, the vast majority have not yet been adequately evaluated (Balandrin et al., 1985).

In every developing country it is necessary that the documentation of medicinal plants be treated as a matter of extreme urgency. The work deals with the screening of Indian medicinal plants for antibacterial and antifungal activity. The pathogenic organisms were selected for the study on the basis of their clinical, pharmaceutical importance as well as for their potential to cause losses.

An elaborate research work ‘Cross-cultural Ethnobotanical Studies of Northeast India’ to identify the common plants different tribal communities of Northeast India use to reduce or alleviate various diseases was carried out (Jain and Saklani, 1992; Saklani and Jain, 1994, 1996).
The studies identified about 650 plants common to both Latin America and India. Of these, 259 plants used as folk medicines were documented in the well-known literature and published papers from India (Ambasta, 1986; Anonymous, 1948-76; Chopra et al., 1956; Jain et al., 1991; Singh et al., 1983) and Latin America (Balbach, 1980; Correa, 1926-1976; Di Stasi et al., 1989; Duke, 1986; Duke and Vasquez, 1994; Lorenzi, 1991; Rodrigues, 1989; Schultes and Raffauf, 1990; Standley, 1920-1926).

The analysis of the uses of these plants showed that some medicinal uses were common to both regions, i.e., the same plant or plant part was used for the same disease or different parts of the same plant were used for the same disease, while certain medicinal uses appeared less known or unknown in India but were extensively applied by people in Latin America and vice versa. An account of common uses of plants of both regions (Jain et al., 1995) and some uses that appeared less known or unknown to India (Jain and Lata, 1996; Jain and Sikarwar, 1996) have been published.

Finding healing powers in plants is an ancient idea. People on all continents have long applied poultices and imbibed infusions of hundreds, if not thousands, of indigenous plants, dating back to prehistory. There is evidence that Neanderthals living 60,000 years ago in present-day Iraq used plants such as hollyhock (Stockwell, 1988; Thomson, 1978) these plants are still widely used in ethno-medicine around the world. Historically, therapeutic results have been mixed; quite often cures or symptom relief resulted. Poisonings occurred at a high rate, also. Currently, of the one-quarter to one-half of all pharmaceuticals dispensed in the world having higher-plant origins, very few are intended for use as antimicrobials.
Natural products are typically secondary metabolites, produced by organisms in response to external stimuli such as nutritional changes, infection and competition (Cotton, 1996; Strohl, 2000). Natural products produced by plants, fungi, bacteria, insects and animals have been isolated as biologically active pharmacophores. Approximately one-third of the top-selling drugs in the world are natural products or their derivatives often with ethno-pharmacological background (Verpoorte, 1989). Moreover, natural products are widely recognized in the pharmaceutical industry for their broad structural diversity as well as their wide range of pharmacological activities (Verpoorte, 2000).

The search for bioactive chemicals from the unstudied part of the plant kingdom can be conducted essentially with three methods (Cotton, 1996). The random method involves the collection of all plants found in a given area of study, phylogenetic targeting means the collection of all members of those plant families which are known to be rich in bioactive compounds, and the ethnobotanical approach is based on the traditional knowledge of medicinal plant use. Cox (1994) suggests that the ethno-directed sampling is most likely to succeed in identifying drugs used in the treatment of gastrointestinal, inflammatory and dermatological complaints.

Due to their specialised biochemical capabilities, plants are able to synthesis and accumulate a vast array of primary and secondary chemicals useful for the plant itself as protecting against environmental stress factors. These compounds have made many plants useful for humans for instance as spices, medicines etc (Cowan, 1999). Natural coumarins, like other unsaturated lactones, may exert various effects on living organisms, both in plants and in animals. In view of their established low toxicity, relative
cheapness, presence in the diet and occurrence in various herbal remedies, it appears important to evaluate the properties and applications of coumarins further utilising an ethnobotanical approach (Egan et al., 1990).

Clinical microbiologists have two reasons to be interested in the topic of antimicrobial plant extracts. First, it is very likely that these phytochemicals will find their way into the arsenal of antimicrobial drugs prescribed by physicians; several are already being tested in humans. It is reported that, on average, two or three antibiotics derived from microorganisms are launched each year (Clark, 1996). After a downturn in that pace in recent decades, the pace is again quickening as scientists realize that the effective life span of any antibiotic is limited.

Worldwide spending on finding new anti-infective agents (including vaccines) is expected to increase 20% every year (Alper, 1998). New sources, especially plant sources, are also being investigated. Second, the public is becoming increasingly aware of problems with the over-prescription and misuse of traditional antibiotics. In addition, many people are interested in having more autonomy over their medical care. A multitude of plant compounds (often of unreliable purity) is readily available over-the-counter from herbal suppliers and natural-food stores, and self-medication with these substances is commonplace.

The use of plant extracts, as well as other alternative forms of medical treatments, is enjoying great popularity in the late 1990s. Earlier in this decade, approximately one-third of people surveyed in the world used at least one “unconventional” therapy during the previous year (Eisenberg et al., 1993). It was reported that in 1996, sales of botanical medicines increased 37% over 1995 (Klink, 1997). It is speculated that the people may
be reacting to over-prescription of sometimes toxic drugs, just as their predecessors of the 19th century reacted to the overuse of bleeding, purging, and calomel (Yankauer, 1997).

Initial screening of potential antibacterial and antifungal compounds from plants was performed with pure substances (Afolayan and Meyer, 1997; Batista et al., 1994; Klopoukh et al., 1997) or crude extracts (Freiburghaus et al., 1996; Silva et al., 1996; Rojas et al., 1992). The methods used for the two types of organisms were similar. The two most commonly used screens to determine antimicrobial susceptibility were the broth dilution assay (Ayafor et al., 1994; Hess et al., 1995; Taniguchi and Kubo, 1993) and the disc or agar well diffusion assay (Navarro et al., 1996); clinical microbiologists are very familiar with these assays. Adaptations such as the agar overlay method (Mayr-Harting et al., 1972) may also be used. In some cases, the inoculated plates or tubes are exposed to UV light (Ashwood et al., 1983; Taylor et al., 1996) to screen for the presence of light sensitizing photo-chemicals. Other variations of these methods are also used. Testing the effects of extracts on invasive Shigella species, noncytotoxic concentrations of the extracts was added to Vero cell cultures exposed to a Shigella inoculum (Vijaya et al., 1995).

In addition to these assays, antifungal phytochemicals are analyzed by a spore germination assay. Samples of plant extracts or pure compounds can be added to fungal spores collected from solid cultures, placed on glass slides, and incubated at an appropriate temperature (usually 25°C) for 24 h. Slides are then fixed in lactophenol-cotton blue and observed microscopically for spore germination (Rana et al., 1997).
After initial screening of phytochemicals, more detailed studies of their antibiotic effects are conducted. At this stage, more specific media are used and these are compared to those of a wider range of currently used antibiotics. The investigation of plant extracts effective against methicillin-resistant \( S. \text{ aureus} \) (Sato et al., 1996) provides an example of prospecting for new compounds which may be particularly effective against infections that are currently difficult to treat. Sato et al., (1997) examined the activity of three extracts from the fruiting bodies of the tree *Terminalia chebula* RETS against methicillin-sensitive and methicillin-resistant \( S. \text{ aureus} \) as well as 12 other gram-negative and gram-positive bacteria. They found that gallic acid derivatives were more effective against both types of \( S. \text{ aureus} \) than they were against other species.

There has been a dramatic increase in pathogen resistance to both pharmaceutical and agrochemical antimicrobial agents. New prototype compounds are needed to address this situation (Bruneton, 1999). Successful discovery of novel natural product antimicrobials has necessitated the development of new bioassay techniques and protocols that allow for the detection of small amounts of biologically active chemicals, which should be selective enough to determine optimum target pathogens, and amenable to the analysis of complex mixtures (Claeson and Bohlin, 1997).

Antimicrobial activities have been evaluated with diverse settings often difficult to compare. There are reports on efficacies of pure coumarins against Gram-positive and Gram-negative bacteria as well as fungi, also extracts have shown activities, \( e.g. \) methanol extract from *Mitracarpus scaber* against *Staphylococcus aureus* and *Candida albicans* (Bisignano et al., 2000) and water extract from *Pelargonium sisoides* against *Escherichia*
coli, Klebsiella pneumoniae, Pseudomonas aeruginosa, Staphylococcus aureus and Streptococcus pneumoniae (Kayser and Kolodziej, 1997). Free 6-OH in the coumarin nucleus has been found to be important for antifungal activity, while the free hydroxyl group is important for antibacterial activity (Sardari et al., 1999).

The study was to investigate some of the pharmacological effects of Acacia nilotica and Abrus precatorius, and in so doing, substantiate its use in traditional medicine. Both species were screened biologically for antibacterial and antifungal activity. They were also screened phytochemically for the presence of various components.

Gilani et al. (1999) reported methanol extract of Acacia nilotica pods (AN) caused a dose-dependent (3-30 mg/kg) fall in arterial blood pressure. Treatment of animals with atropine abolished the vasodilator response of acetylcholine (ACh), whereas the antihypertensive effect of the plant extract remained unaltered. The antihypertensive effect of plant extract has been reported independent of muscarinic receptor stimulation or adrenoceptor blockade.

Amos et al. (1999) studied the effect on the isolated guinea-pig ileum, the aqueous extract of Acacia nilotica seeds displayed sustained dose-related contractile activity. The contractions which were reduced by hexamethonium, promethazine or atropine were completely abolished by nifedipine.

Sharma et al. (1999) determined chemical constituents of the bark and roots of Acacia catechu. The compounds were isolated and their structures elucidated using spectral data. These were characterized as lupenone, lupeol, poriferasterol, octacosanoic acid, proiferasterol acylglucosides,
hexacosanoic acid ester, ursolic acid, proiferasterol-3-beta-glucosidde, 3-methylquercetin, quercetin, dihydrokaempferol, dihydroquercetin, (-)-epicatechin and catechin. This is first report of their occurrence in this species of *Acacia*.

Baldwin *et al.* (1999) reported gums obtained from different sub species of a single species (e.g. *A. nilotica* and *A. nilotica* spp.) nilotica were shown to have very distinct chemical compositions. The results demonstrated for the first time, the presence of hydroxyproline rich glycoprotein (HRGP) epitopes in the gum exudates of *A. tortilis*, *A. nilotica*, *A. microbotrya*, *A. pycnantha* and *A. campylacantha*. These clearly demonstrated the utility of such immunological tests in chemotaxonomic analyses of this economically important class of plant gum exudates.

Huang *et al.* (2000) reported *Acacia mangium* trees planted in 1993 showed higher growth rate and aboveground biomass than those of *Acacia cunninghamia* and *Acacia auriculaeformis*. The phyllodes of *Acacia mangium* were found to contain abundant nutrients, such as protein, amino acids.

Chauhan *et al.* (2000) compiled botany, ecology, distribution, silviculture, management and medicinal uses of cutch khair tree (*Acacia catechu*) have been described along with methods of extraction of katha. Twenty exotic *Acacia* introduced from different countries into various places in India have also been enumerated.

Bennie *et al.* (2002) reported the series of naturally occurring pranthocyanidins from *Acacia sp.* with 7,8-dihydroxylated A-rings is extended by identification of the proteracacinidins epioritin (4-beta to 6)-oritin-4alpha-ol, epioritin-(4beta to 6)-ent-oritin-4alpha-ol, ent-oritin-(4beta-
to 6)-epioritin-4alpha-ol, ent-oritin-(4beta to 6)-oritin-4alpha-ol, ent-oritin-
(4beta to 6)-epioritin-4alpha-ol, ent- oritin-(4beta to 6)-oritin-4alpha-ol, ent-
oritin-(4beta to 6)-epioritin-4beta-ol, the ‘mixed’ proteracacinidins/
melacacinidins epioritin-(4beta to 6)-epimesquitol-4alpha-al, epioritin-(4beta
to 6)-epimesquitol-4beta-ol and epimesquitol-(4beta to 6)-epioritin-4alpha-
ol, and the promelacacinidin epimesquitol-(4beta to 6)-epimesquitol-4beta-
ol.

Volatile compounds of the concrete were isolated by steam distillation
yielding 0.06 percent (mL of oil/100 g pf extracted flowers). Flower oil was
analyzed by GC and GC/MS. The main constituents were: geranyl acetone
(2.2 percent), beta-eudesmol (4.0 percent), (E,E)-farnesol (3.1 percent),
(E,E)-farnesyl acetate (6.2 percent), heneicosane (13.5 percent) tricasane
(7.7 percent) and pentocasane (6.6 percent). The variation in group content
was: monoterpenes (0.9 percent), diterpene (7.5 percent), linear saturated
hydrocarbons (49.9 percent), linear unsaturated hydrocarbons (1.4 percent),
oxygenated sesquiterpenes (9.0 percent), and other oxygenated compounds
(17.1 percent) (Malizia et al., 2002)

Sarjekar and Shrivastava (2002) studied some conventional (Glycine
max varieties Js-80-21 and fava bean Jv-2) and non conventional (Albizia
procera, Acacia auriculiformis and Peltophorum ferrugineum) legumes
were studied for their amino acid composition by amino acid analyzer.

Yadava and Sodhi (2002) reported a new bio-active flavone glycoside,
(C28H32O17, mp 283-284 degree C), was isolated from the ethylacetate
soluble fraction of the ethanolic extract of the stems of Acacia catechu
commonly known as Khair in Hindi, and its structure was characterised as
5,7,3’,4’-tetrahydroxy-3-methoxy flavone-7-O-beta-D-galactopyranosly-(1
Seo et al. (2002) studied bioassay-guided fractionation of the MeOH extract of *Acacia tenuifolia* using the engineered yeast strains 1138, 1140, 1353, and Sc7 as the bioassay tool resulted in the isolation of the three new saponins and the three known saponins. The structures of the new compounds were established on the basis of HRMS, 1D and 2D NMR spectral data on the intact saponins, and GC-MS analyses of the sugars. The new saponins showed cytotoxicity against mammalian cell lines.

Anuradha et al. (2000) in her studies showed that petroleum ether extract of seeds of six plants (1000, 500, 250, 125 and 62.5 ppm concentrations) gave highest mortality. It was observed in the seed extracts of *Acacia nilotica*, *Citrullus colocynthus*, *Indigofera tinctoria* and *Madhuca longifolia*. Benzene extracts of all the plants except Indigogera showed high percentage of mortality. The percentage of adult emergence was 8.3. Extended larval periods, low fecundity and 100 percent mortality of second generation larvae were also observed.

Negi et al. (2000) studied the lignins of some grasses, legumes and tree leaves like *Albizia lebbeck*, *Acacia nilotica* and *Sesbania sesban* etc. present in their cell walls have been oxidised with alkaline nitrobenzene. On degradation guaiacyl lignins yielded ferulic acid, while coumaryl lignins yielded o-Coumaric acid (O-CA) and p-Coumaric acids (p-CA). These phenolic acids were present in the range of 8.8-52.7 mg/g of cell wall. Generally, all forage lignins mainly yielded ferulic acid.

Kambizi and Afolayan (2001) compiled ethnobotanical information obtained from traditional herbalists and other knowledgeable rural dwellers,
has revealed 15 plant species belonging to 10 families as medicinal plants used for the treatment of infections in the area. Roots are the most frequently used parts of the plants constituting 53 percent of preparations while oral administration of extracts is the main method of prescription. Based on the information gathered from the traditional healers, *Acacia nilotica, Cassia abbreviata, Dichrostachys cinerea, Solanum incanum, Bernonia amygdalina* and *Zanha africana* were the most frequently used plants for the treatment of STDs. The methanol extracts of *Cassia abbreviate*, *Zanha africana* and *Acacia nilotica* showed significant inhibition against Gram-positive and Gram-negative bacteria, while acetone extracts of these plants inhibited most of the species. Generally the water extracts show less activity than acetone and methanol extracts.

Readel *et al.* (2001) determined the percentage of tannins in leaves, bark, wood and immature fruits of several species of *Acacia* and related mimosoid legumes by a modified hide powder procedure and by precipitation with casein. The relative percentages of hydrolyzable and condensed tannins were determined by the iodate and the vanillin-HCl methods, respectively. Gallotannins of selected samples were also determined by the rhodanine method. Although the amount of total tannins was similar for the first two method, values for condensed tannins by the vanillin-HCl method were frequently two to four times greater than the total tannin values.

Rojas *et al.* (2001) gave the pimarance-type structures previously suggested for leucophleol and leucophleoxol, two diterpenoids isolated from *Acacia leucophloea*, and be amended to the isopimarane-type derivatives. These corrections were supported on NMR spectroscopic studies and, an X-
ray diffraction analysis. Moreover, the unpublished complete and unambiguous 1H and 13C NMR assignments of isopimarane-type derivatives of leucophleol and leucophleoxol together with those of leucoxol, another diterpenoid from the same plant, were also reported.

Bennie et al. (2001) identified and reported the first triflavanoids with both C-C and C-O-C interflavanyl bonds, epioritin-(4beta to 3)-epioritin-(4beta-6)-epioritin-4beta-ol and epioritin-(4beta to 3)-epioritin-(4beta-6)-epimesquitol-4alpha-ol, were identified in the heartwood of *Acacia caffra*. The ethereal interflavanyl bond is readily susceptible to reductive cleavage with sodium cyanoborohydride in trifluoroacetic acid/dichloromethane which hence permits the equivocal assignment of the absolute configuration of constituent flavanyl unit.

Southwell (2000) reported the essential oil obtained by hydrodistillation of the leaves and twigs of *Acacia nuperrima* sp. *cassitera* (Mimosaceae) growing wild in north eastern Australia was investigated by GC/MS and FTIR. Two chemical forms yielding 0.6 percent and 0.3 percent on a dry weight basis were found to be rich in Kessane (88.8 percent) and alpha-pinene (16.2 percent), respectively.

Hussein et al. (2000) studied one hundred fifty-two methanol and water extracts of different parts of 71 plants commonly used in Sudanese traditional medicine for their inhibitory effects on hepatitis C virus (HCV) protease (PR) using in vitro assay methods. Thirty four extracts showed significant inhibitory activity. Of these, eight extracts, methanol extracts of *Acacia nilotica*, *Boswellia Carterri*, *Embelia Schimperi*, *Quercus infectoria*, *Trachyspermum ammi* and water extracts of *Piper cubeba*, *Q. infectoria* and *Syzygium aromaticum*, were the most active.
Sinha Babu et al. (2000) observed acaciaside A and acaciaside B, two acylated triterpenoid diglycosides isolated from the funicles of *Acacia auriculiformis* are known to have antihelmintic activity. Rat liver microsomal membranes were incubated with saponins at 30°C for 2h in the presence or absence of catalase, superoxide dismutase and thiourea.

Singh (1999a) reported that periodate oxidation is the most important reaction in the structural determination of polysaccharides. Gum polysaccharide from *A. auriculiformis* was oxidized with water and sodium periodate as oxidant. It yielded 1.24 moles of formic acid/equivalent of gum with concomitant consumption of 6.05 moles of periodate. The presence of (1 to 6) beta, (1 to 3) beta and (1 to 5) alpha-type linkages is confirmed by periodate oxidation results.

Singh (1999b) reported polysaccharide extracted from *Acacia auriculiformis* gum with water L-arabinose, and D-galactose in 1:4 molar ratio. Methylation of gum afforded methyl sugars as 2,3,4,6,tetra-O-methyl-D-galactose; 2,3-di-O-methyl-L-arabinose, 2,3,4-tri-O-Methyl D-galactose, 2,4-di-O-methyl-D-galactose and 2,3,4,-tri-O-methyl-D-glucuronic acid in 1:1:1:2:1 molar ratio.

Anam (1998) determined two novel diterpenodis, 11,14,15-trihydroxy-12-methoxy-20-oxo-8, 11,13-aboetatroem-7-one and 10,11,14-trihydroxy-18-acetoxymethylene-12-methoxy-8,11,13-abietatrien-7-one and known diterpenes sugiol and inuroyleanol have been isolated from the root extract of *Acacia deurrens*.

El-Tahir et al. (1999) investigated fifty nine percent of plant extracts from 22 plant extracts exerted activity on *P. falciparum* strain 3D7 (chloroquine sensitive). Plant extracts from *Gardenia lutea, Haplophyllum*
tuberculatum, Cassia tora, Acacia nilotica and Aristolochia bracteolate possessed antiplasmodial activity. A. nilotica ethyl acetate extract possessed the highest activity. Phytochemical analysis indicated that the most active phase contained terpenoids and tannis and was devoid of alkaloids and saponins. The effect of plant extracts on lymphocyte proliferation showed low toxicity to the cells. This plant has been subjected to long term clinical trials in folk medicine.

Alasbahi et al. (1999) tested the extracts from tissues of Acacia harala, Acalypha fruticosa, Capparis cartilaginea, Euphorbia fruticosa, Indigofera sedgewickiana, Flemingia grahamiana and Plectranthus cf. barbatus against two gram positive bacteria, Staphylococcus aureus (ATCC 25923) and Enterococcus faecalis (ATCC 13433), two gram negative bacteria, Escherichia coli (ATCC 25322) and Pseudomonas aeruginosa (ATCC 27853), and yeast Candida albicans (ATCC 14053), using a qualitative agar diffusion test. All tested plants showed various antimicrobial activity against at least one microorganism. Extracts from Acalypha fruticosa, Indigofera sedgewickiana, and Acacia harala were the most active.

Tripathi and Dubey (2001) studied the ethnomedicinal value of Acacia nilotica. Besides, its biological activity and phytochemical investigations have also been compiled. The prospectives of extracts of the plant as herbal fungitoxicant in protecting fruits and vegetables during storage and marketing.

Tezuka et al. (2000) isolated three saponins (acacic acid glycosides), named kinmoonosides A-C, together with a new monoterpenoid, from a methanoloic extract of the fruits of Acacia concinna. The structures of kinmoonosides A-C were elucidated on the basis of spectral analysis. The
new monoterpenoid was determined as 4-O-{(2E)-6-hydroxyl-2-hydroxymethyl - 6 - methyl - 2, 7 - octadienoyl} - D - quinovopyranose, Kinmoonosides showed significant cytotoxicity against human HT-1080 fibrosarcoma cells.

Yadava and Sodhi (2001) in the chemical investigations of pods (Acacia concinna) reveal the presence of fats, carbohydrates, fatty acids, D-arabinose, alpha-rahamnose, lactose, raffinose, D-galactose, maltose, D-fructose, D-galactose, as sugars. Also identified are amino acids viz., alanine, lycine, valine, aspartic acid, glycine, leucine, glutamine and cysteine.

Dwidedi et al. (2000) Four leaf acetone extracts viz., Jasminum arborescens, Eucalyptus rudis, Bignonia carpreolata and Acacia nilotica were applied to Aedes aegyptii to assess their potentialities at three different concentrations were (1, 1.5 and 2 percent). Thereafter mortality, was recorded after 24, 48 and 72 hours of the treatment. The extracts proved to be potent larvicide causing complete development arrest of 4th instar larvae.

Yadava and Reddy (2002) reported a new flavonol glycoside (C_{29}H_{34}O_{16}, m.p. 260-262°C), was separated from the chloroform soluble fraction of the concentrated 80 percent methanolic extract of the seeds of Abrus precatorius. It was characterised as a new biologically active ‘flavonol glycoside 7,3',5'-trimethoxy-4'-hydroxy flavone-3-O-beta-D-galactosyl-(1 to 4)-alpha-L-xyloside by several colour reactions, spectral analysis and chemical degradations. The antimicrobial activity of the methanol soluble fraction of the extract of the plant was found to be fairly good against gram-positive bacteria Staphylococcus aureus and gram-
negative bacteria e.g. *Klebsiella pneumoniae* and *Escherichia coli* and antifungal activity against, *A. niger* and *Fusarium oxysporum*.

Billore *et al.* (2000) in his recent biological studies, particularly in the field of ethno-medicine have brought to light some interesting medicinal lores on birth control practiced traditionally by the tribals of Rajasthan in Western India. An account of ten such interesting hitherto unrecorded or less known medicinal lores for birth control have been presented, besides other data. Some of the herbs used in birth control includes species of Mangifera, Alangium, Musa, Citrullus, Ziziphus, Abrus etc. either singly or in combination. The use of Jaggery (sugar candy) in also there. Since these methods are simple, effectively used and already in practice, it provides interesting material for the study of birth control measures.

Ramnath *et al.* (2002) reported a non toxic dose of abrin, (1.25 microg/kg body wt) isolated from the seeds of red variety of *Abrus precatorius* consecutively for five days in normal mice stimulated specific humoral responses. The results suggest that abrin can potentiate the humoral immune response of the host.

Gautam *et al.* (2001) observed seeds of gunja (*Abrus precatorius*) used in a number of Ayurvedic preparations contains toxic protein abrin and alkaloid hypaphorine. The study revealed that during Sodhana (detoxification) the toxic alkaloid hypaphorine get transformed into less toxic alkaloid abrine.

Anam (2001) reported two tritepenoid saponins isolated from the aerial parts of *Abrus precatorius* and their acetates derivatives, 3 and 4 have been tested for anti-inflammatory activity using the croton oil ear model. All
the compound exhibited anti-inflammatory activity but the acetates showed
greater inhibition than the parent compounds.

Kim et al. (2002) isolated three new (1-3) triterpenoids and one
known (4) triterpenoid from an acid hydrolyzed methanol-soluble extract of
the leaves of Abrus precatorius. Their structures were identified as
(20S,22S)-3beta, 22-dihydroxcucurbita-5 (10), 24-diene-26, 29-dioic acid
gamma-lactone (1), 3-O-{6’-methyl-beta-D-glucuronopyranosyl}-3beta,
22beta-dihydroxyolean 12-en-29-oic acid methyl ester (2), 3-O-beta-D-
glucuronopyranosylsophoradiol methyl ester (3), and sophoradiol (4) by
spectroscopic techniques including 2D NMR.

Ramnath and Kuttan (2000) isolated Abrin (glycoprotein), a glucose
specific lectin was purified using sepharose 4B affinity column from seeds
of Abrus precatorius. It exhibited antitumor activity in mice when used at a
sublethal concentration of 150ng/dose/animal. On developed tumour masses
abrin administration brought about significant reduction in tumour volume,
especially in DLA induced tumours. Prophylactic administration of abrin
was found ineffective.

Ramnath et al. (2001) reported Abtin, a lectin obtained from Abrus
precatorius is highly toxic and when injected in nontoxic concentrations
consecutively for five days in mice, the immune system responded well with
an increased total leucocyte count, lymphocytosis, increased weight of
spleen and thymus, increase in circulating antibody titre, increase in
antibody forming cells, increased bone marrow cellularity and alpha-esterase
positive bone marrow cells. All these indicated that abrin can potentiate the
humoral immune response of the host.
Gautam et al. (1999) made a comparative study of various phytochemical parameters of three forms of processed (with cow’s milk and kanji) seeds (red brown and white) and unprocessed seeds of Abrus precatorius. TLC and densitometric scanning of successive extractives was also made to serve as markers for processed and unprocessed seeds. The percentage of proteins, tannins, alcohol, and water soluble extractives decreased in the processed seeds.

Molgaard et al. (2001) reported extracts of 23 plants species used popularly against schistosomiasis in Zimbabwe were screened for their anthelmintic effect. Extracts of stem and root from Abrus precatorius, of root bark and leaves from Ozoroa insignis and of root bark from Zizyphus mucronata gave the best result against tapeworms.

The best results against schistosomules were obtained with stem and root extracts from Abrus precatorius and stem bark from Elephantorriza goetzei. Although the activity of root and root bark extracts commonly used in traditional medicine as verified in this study, showed that the extracts from leaf and stem can be effective anthelminscts.

This study is based on ethnobotanical knowledge of members of leguminosae viz. Acacia nilotica and Abrus precatorius growing in Marathwada region of Maharashtra, India. For the scientific evaluation of traditional use of these plants as drugs, the biological activities of the plants containing various active components were studied with the biological tests.
The study aims:

• To study the anti-bacterial potential of various plant parts of *Acacia nilotica* and *Abrus precatorius* against two common bacterial human pathogens *Staphylococcus aureus* and *E. coli* and two bacterial plant pathogens *Xanthomonas malvacerum* and *Corynebacterium* sp.

• To study the anti-fungal potential of various plant parts of *Acacia nilotica* and *Abrus precatorius* against two common fungal human pathogens *Candida albicans* and *Trichophyton rubrum* and two fungal plant pathogens *Alternaria solani* and *Helminthosporium turcicum*.

• To investigate the antimicrobial activity of these plants using crude extracts at various concentration.

• To separate and analyze the various phytochemicals present in the crude extracts of the plants and to assess the antibacterial and antifungal activity of each separated component.