Plants have long been the principal tools of traditional medicinal system. Although ancient in origin, many traditional medical paradigms and their pharmacopoeias have evolved into quite sophisticated systems, using thousands of plants and their natural systems. The rural folk and tribals in India even now depend largely on the surrounding forests for their day to day needs. Medicinal plants are being looked upon not only as a source of health care but also as a source of income. India has a rich diversity of medicinal plants. Extensive study has been done by various workers for the antibacterial and antifungal activities of various plant extracts from time to time.

Although there is no authentic record of medicine used by ancient people, yet Rigveda which is the oldest book in the library of man provide enquisitive information about the medicine used by them. Atharvaveda, the another religious book of Hindus has described about 2000 plants having medicinal value. Sushruta Samhita (1000 BC) further record 700 plants of medicinal properties. Beside these there have been a number of workers from time to time who have described the medicinal importance of plants namely Charak, Watts, Kirtikar & Basu, Nandkarni, Chopra etc.


2.1 SCREENING OF PLANTS FOR ANTIMICROBIAL ACTIVITY AT INTERNATIONAL LEVEL

Anesini and Pereze, (1993) screened the plants used in Argentine folk medicine for antimicrobial activity. Boiling water extract of 12 plant species were active against
Staphylococcus aureus, where as 10 were effective against Escherichia coli and 4 against Aspergillus niger.

A total of 315 extracts/ fractions from 63 traditionally used Ethiopian plants were screened for antimicrobial activity against known strains of Staphylococcus aureus, Salmonella gallinarum, Escherichia coli, Proteus vulgaris, Pseudomonas aeruginosa and Candida albicans. It was found that 63 plants showed activity against one or more micro-organisms. The aqueous extract from six plants (Cucummin prophetarum, Calpurnea aurea, Rosa aeruginosa, Clematis sinensis, Calotropis procera, Rumex steudelly) were found to be active against all the test micro-organisms (Desta, 1993).

Antimicrobial activities of 64 East African plants were evaluated. The plant collected on the basis of information provided by medical man showed much higher probability of finding active extract than the plants collected randomly (Taniguchi & Kubo, 1993).

Antifungal properties of essential oil from various plant species have been reported by Catherin & Chaumond (1995). Methanol and water extract of six fabaceae species traditionally used in many medicines for treatment of diarrhea and eye infection were phytochemically screened and tested for in vitro antimicrobial activity from Yuctana traditional medicinal plants. Four species showed activity against gram negative bacteria, five exhibit some activity against Candida albicans, two exhibit activity against Aspergillus niger and one inhibit growth of Pseudomonas aeruginosa, (Rosado Vallado et al., 2000).

Oil and crude alkaloids of Aphanamixis polystachya seeds were tested for antimicrobials against seven bacterial human pathogens and seven fungal plants pathogens. Both oil and crude alkaloids shows very little activity or no inhibitory activity against pathogenic bacteria but shows comparatively better antifungal activity against all fungal pathogens (Bhuyal et al., 2000).

Various plants species such as Ricus sycamorus, Morus australis, Ludwigia octoualuis, Thuja orientalis, Gnetum species, Zea mays kernel, E. elaterium, certain
Sudanese plants used in folkloric medicine, Cymbopogon citratus, Solenostemn argel etc. have been screened for antimicrobial activities in different countries by various workers (Chifundera et al., 1990; Chen et al. 1989; Leifertoja and Lisa et al. 1979; Iesbrecht et al. 1985; Neucere et al, 1987). Nun et al. (1990); Almagboul et al. (1985); Onawunmi and Ougnlana (1986); Thrib et al.(1986); Rios et al. (1988).

Lindsay et al. (2000) tested the hexane, dichloromethane, methanol and water extract of wood of Carissa lanceolata (R.Br) against the bacteria like Escherichia coli, Pseudomonas aeruginosa, Staphylococcus aureus. The dichloromethane extract exhibited high antibacterial activity. The three active compounds: Carrissone, dehydrocarrissone and carindone isolated from dichloromethane extract revealed good antibacterial activity with minimum inhibitory concentration less than 0.5 mg/ml for Escherichia coli and Staphylococcus aureus. It is between 1-2 mg/ml for Pseudomonas aeruginosa. Antibacterial testing showed that dehydrocarissone was the most active compound followed by carindone.

Okek et al. (2001) tested the ethanolic extract of two Nigerian species Piper guineense (fruit) and Xylopia aethiopica (seeds) for antimicrobial activity against a fungus and seven bacterial strain by agar diffusion technique and found them either bactericidal or bacteriostatic against common clinical isolates like Escherichia coli, Klebsiella pneumoniae, Salmonella typhi, Proteus vulgaris, Staphylococcus aureus and Bacillus subtilis. Fungal species tested includes Candida albicans. Ethanolic extracts of Piper guineense and Xylopia aethiopica inhibited growth of various test organisms. Piper guineense was fungistatic against Candida albicans (MIC, 1.56 mg/ml), bactericidal against clinical isolate of Bacillus subtilis and Escherichia coli (MBC, 6.25 mg/ml).

Except for Pseudomonas aeruginosa, bacteriostatic against all other bacterial test strains evaluated (MIC, 1.56- 5.0 mg/ml). Extracts of Xylopia aethiopica were bacteriostatic against test organisms (MIC, 1.56-5.0mg/ml) with the exception of Bacillus subtilis and Pseudomonas aeruginosa. Bactericidal activity (MBC, 25mg/ml) was only apparent against clinical isolates of Klebsiella pneumoniae and Proteus vulgaris. No activity against Candida albicans was observed.
Khan et al. (2003) studied *in vivo* antifungal activity of aqueous extract from *Nigella sativa* seeds on candidiasis in mice. An intravenous inoculum of *Candida albicans* produced colonies in the liver, spleen and kidney of organism. Treatment of mice with plant extract (6.6 ml/kg equivalent to 5 mg of estimated protein, once daily for three days) 24 hours after inoculation caused a considerable inhibitory effect in growth of organism in all organs studied. A 5 fold decrease in *Candida* in kidneys, 8 fold in liver and 11 fold in spleen was observed in group of animals post treated with plant extract.

Voravuthikunchai and Kitpipit, (2005) studied the activity of medicinal extracts against hospital isolates of Methicillin resistant *Staphylococcus aureus* (MRSA). Aqueous and ethanol extracts of ten traditional Thai (Thailand) medicinal plants were investigated for their ability to inhibit 35 hospital isolates of Methicillin resistant *Staphylococcus aureus* (MRSA). Nine plants display activity against all the isolates tested. Ethanol extract of *Garcinia mangostana, Punica granatum* and *quecus infectoria* were most effective with MICs for MRSA isolates of 0.05-0.4, 0.2-0.4 and 0.2-0.4mg/ml and for *Staphylococcus aureus* of 0.1, 0.2 and 0.1mg/ml respectively.

Bahorun et al. (2005) studied the phytochemical constituents of *Cassia fistula*. This plant is an important source of naturally occurring bioactive compounds. Polyphenolic abundantly present in both in vivo and in vitro extracts may prove to be very important, non toxic chemopreventive agents against various oxidative stress. *Cassia fistula* callus culture could supply potent oxidative and chemoprotective components like flavonoids and anthraquinones. It has become important to evaluate how the bioactive components in the plant extracts effect cellular signaling process and modulate oxidative stress mediated responses (Aruoma et al., 2003; Farombi,2003). Integrating traditional medicine in to health system require both demonstration of clinical and biochemical evidence of efficacy.

Paulsen et al. (2005) made an ethnopharmacological survey carried out to collect information on the use of seven medicinal plants in rural areas in the nearby region of Bamako, Mali. The plant were *Opilia celtidifolia, Anthocleista djalonensis, Erithrina senegalensis, Heliotropium indicum, Trichilia emetica, Piliostigma thonningii* and
Cochlospermum. About 50 medical indications were reported for use of these plants in traditional medicine. The most frequent ailments reported were malaria, abdominal pain, and dermatitis. The highest number of usage was reported for treatment of malaria (22%). The majority of the remedies were prepared from freshly collected plant material from wild and from a single species only. They were only taken orally, but some applications were prepared with a mixture of plants or ingredients such as honey, sugar, salt, ginger and pepper. Decoction of the leaves was the main form of preparation (65%). And leaf powder was mostly used for preparation of infusion (13%). The part of the plants most frequently used was leaves. There was a high degree of informant consensus for the species and their medicinal indications between healers interviewed.

Nino et al. (2006) Studied the antibacterial, antifungal, and cytotoxic activities of eleven Solanaceae plants from Colombian biodiversity. The hexane, dichloromethane and methanol extracts of 11 Solanaceae plants collected in Regional Natural Park, Ukumari (RNPU) Colombia were evaluated for their antibacterial, antifungal activities through agar well diffusion method and for cytotoxic activity by brine shrimp lethality assay. The bacterial strains include Bacillus subtilis, Staphylococcus aureus, Pseudomonas aeruginosa and Escherichia coli. For antymycotic activity, tests were performed with Candida albicans, Aspergillus fumigatus and Fusarium solani. Methanolic plant extracts were most active (100%) in microbiological tests than those from dichloromethane (54.54 %) and hexane (18.18 %); moreover, methanol extract were also more cytotoxic. This could be due to the methanol polarity that is able to extract many different polar constituents. The most susceptible fungus was Candida albicans that showed activity with 10 extracts (30.30%). In addition, the dichloromethane and methanol extracts showed activity against Fusarium solani with low MIC (0.62 mg/ml).

Hernandez et al. (2006) studied the antimicrobial activity of Tagetes lucida against 11 bacterial strains and one yeast strain (Candida albicans). Acetone and ethyl acetate extracts showed antibacterial activity against Shigella boydii, Staphylococcus aureus, Staphylococcus epidermidis, Pseudomonas aeruginosa, Bacillus subtilis, Sarcina lutea and four strains of Vibrio cholerae. Methanol extract showed activity against Staphylococcus aureus, Staphylococcus epidermidis and Vibrio cholerae. Hexane extract
showed activity against *Staphylococcus aureus, Staphylococcus epidermidis* and *Bacillus subtilis*. *Candida albicans* showed susceptibility to chloroform extract. The bioactive compound 5,7,4-trimethoxyflavone was identified. This compound (flavones) have been reported to have different biological effects such as antibiotic activity (Harborn, 1994).

Agyare et al. (2006) studied the antimicrobial activity and phytochemical analysis of some medicinal plants from Ghana. The methanol and petroleum ether extracts of leaf and stem bark of *Nauclea latifolia, Bridelia atroviridis* and *Zanthoxylum gilletii* showed antimicrobial activity against test organisms (*Escherichia coli, Pseudomonas aeruginosa, Staphylococcus aureus, Bacillus subtilis, Candida albicans* and *Aspergillus niger*). The methanol extracts of the plants exhibited higher activity than the petroleum ether against the test organisms. The activity of the extracts may support the folkloric uses of these plants as agents for management of sores, gonorrhoea, dysentery, wounds and toothache. The phytochemical screening of the extracts showed the presence of alkaloids, tannins, saponins and sterols.

Rene et al. (2007) studied the antibacterial activity of *Euphorbia prostrata* against the dysentery causing organism *Shigella dysenteriae* in rats. Diarrhoea was induced in rats by oral administration of 12x 10^-8* Shigella dysenteriae. Diarreic rats were treated for five days with 10, 20 or 40mg/kg extract or norfloxacin. The aqueous and ethanolic extract of *Euphorbia prostrata* was not toxic. In vitro The minimum inhibitory and minimal bactericidal concentration of the extracts were 3500 and 1200µg/ml, respectively. In vivo the diarrhea went along with increase in faeces frequency. The increase in bacterial population to a maximum on the 2nd day. The death rate in diarrheic rats (Control group) was 100% by day 6th by using *Euphorbia prostrata* extract (20 and 40mg/kg). This is nearly equal to norfloxacin.

Rahman & Anwar, (2007) studied the antimicrobial activity of crude extract obtained from root of *Plumbago zeylanica*. Ethanolic extract investigated for 11 human pathogenic bacteria and six phytopathogenic fungi. Among the bacteria *Vibrio cholerae* was found to be most sensitive showing highest diameter of zone of inhibition and lowest minimum inhibitory concentration (MIC) value (200 µg/ml). The extract was very
effective against *Escherichia coli* and *Pseudomonas aeruginosa* showing MIC value of (250 µg/ml). Among the phytopathogenic fungi tested, *Curvularia lanata* exhibit highest sensitivity followed by *Colletotrichum corchori* and *Fusarium equiseti*.

Okwu & Morah, (2007) Studied the antimicrobial and phytochemical evaluation of seed of *Garcinia kola* and *Dennettia tripetala* fruits. The crude ethanolic extract of *Garcinia kola* seed inhibited *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Salmonella typhi*, *Bacillus subtilis* and *Candida albicans* but did not inhibit *Escherichia coli* and *Aspergillus niger*. Crude ethanolic extract of *Dennettia tripetala* fruit inhibited *Pseudomonas aeruginosa*, *Salmonella typhi*, *Bacillus subtilis*, *Aspergillus niger* and *Candida albicans* but did not inhibit *Escherichia coli* and *Staphylococcus aureus*. Phytochemical evaluation of *Dennettia tripetala* fruit and *Garcinia kola* seed showed availability of bioactive compounds comprising alkaloids, saponins, flavanoids, tannins and phenols. The antimicrobial observations of the above plants indicate their uses in herbal medicine in Nigeria.

Akinnibosun et al. (2008) studied the antibacterial activity of *Phyllanthus amarus* Schum and Thonn. on five vegetative organisms. Sensitivity discs test showed varied degree of inhibition at different concentration of test bacteria including *Proteus* species, *Escherichia coli*, *Streptococcus species*, *Salmonella species* and *Staphylococcus aureus*. Zone of inhibition produced was between 5-12 mm diameter. Highest inhibition zone was observed for *Escherichia coli* and *Streptococcus species* for hot extracts. For cold extracts the highest zone of inhibition was observed for *Salmonella species*.

Segismundo et al. (2008) studied the antifungal activity and phytochemical analysis of leaves of *Gouania javanica* Miq. Leaf extract showed the strong (+++) antifungal activity against *Aspergillus niger* with inhibition zone 21.16 mm. Moderate against *Candida albicans* (+++) with inhibition zone 12.08 mm and weak antifungal activity against *Tricophyton mentagrophytes* with inhibition zone (8.55). Phytochemical analysis reveals the presence of flavonoids, saponins, triterpenes, glycosides and alkaloids.

Banso et al.(2008) studied the phytochemical and antibacterial activity of bark extracts of *Acacia nilotica*. Stem bark extract of the plant posses active principles e.g.
terpenoids, tannins, alkaloids, saponins and glycosides. The antimicrobial activity of the extracts was assayed against *Streptococcus viridans*, *Staphylococcus aureus*, *Escherichia coli*, *Bacillus subtilis* and *Shigella sonnei* using agar diffusion method. The plant extracts exhibited antimicrobial activity against all the test organisms. *Bacillus subtilis* was the most susceptible while *Candida albicans* was most resistant. MIC value ranges from 35 and 50 mg/ml.

Ibrahim et al. (2008) studied the phytochemical screening and toxicity of *Argemone Mexicana*. Preliminary phytochemical evaluation of the ethanolic extract revealed the presence of reducing sugars, flavonoids, sterols/terpene, tannins and alkaloids. Phytochemicals with biological activity have had great utility as pharmaceuticals. The results of various phytochemical tests indicated the plant to be rich in various biologically active compounds which could serve as a potential source of crude vegetable drugs and in addition the plant is slightly toxic to the experimental model used.

Gangoue et al. (2009) study in vitro antimicrobial activity of some traditionally used medicinal plants against beta-lactam-resistant bacteria. The study was initiated to evaluate the antibacterial activity of 17 crude extracts from 12 medicinal plants against the beta-lactam-resistant bacteria (*Klebsiella pneumoniae*, *Klebsiella oxytoca*, *Enterobacter cloacae*, *Serratia marcescens*, *Acinobacter baumannii*, *Staphylococcus aureus* and *Enterococcus species*) by using disc diffusion and agar dilution assay. The crude plant extracts demonstrated broad spectrum activity against all bacteria tested with inhibition zones with range of (8 to 30 mm). Out of 17 plant extracts studied 7 showed good antimicrobial activity against the tested bacteria. Stem bark of *Bridelia micrantha* and leaves of *Dortenia picta* were most active against beta lactame producing gram negative bacilli. This study showed that medicinal plants could be a sources of compounds which can use to fight against beta-lactame-resistant bacteria.

Cheruiyot et al. (2009) studied in vitro antibacterial activity of selected medicinal plants from Longisa region of Bomet district, Kenya. Five plants species (*Olea africana*, *Psidium guajava*, *Vernonia amygdalina*, *Lantana camara* and *Mangifora indica*) were taken for study against three bacterial strains (*Staphylococcus aureus*, *Pseudomonas*
*Pseudomonas aeruginosa* and *Escherichia coli*). The methanol extracts showed weak antibacterial activity against test organisms as compared to Gentamycin. All extracts exhibited a significant activity against *Staphylococcus aureus*, while *Lantana camara* and *Vernonia amygdalina* lacked efficacy against *Pseudomonas aeruginosa* and *Escherichia coli*. *Olea africana* and *Psidium guajava* presented lowest activity against *Staphylococcus aureus*.

Sengul *et al.* (2009) studied the total phenolic contents, antioxidant and antimicrobial activities of some medicinal plants. Beside the presence of phenolic compounds and antioxidant properties, the aqueous and methanolic extracts showed good antimicrobials activities. Based on the results, methanolic extracts of *Inula aucherana*, *Fumaria officinalis*, *Crocus sativus*, *Vicum album*, *Tribulus terrestris*, *Polygonatum multiflorum*, *Alkanna tinctoria*, and *Taraxacum officinale* had different level of antioxidant and antimicrobial activity against common human bacterials and fungals isolates. The methanolic extracts *Vicum album* and *Alkanna tinctoria* showed antimicrobial activity against 9 out of 32 micro-organisms, *Polygonatum multiflorum* 10 out of 32 micro-organisms, *Taraxacum officinale* 11 out of 32 microorganisms, *Fumaria officinalis*, *Tribulus terrestris*, and *Crocus sativus* 13 out of 32 microorganisms and *Inula aucherana* showed antimicrobial activity against 15 out of 32 microorganisms.

Ajali & Okoye, (2009) studied the anti-inflammatory and antimicrobial activities of root bark extract of *Olax viridis*. The result of antimicrobial screening of hexane and methanol extracts showed broad spectrum antimicrobial activity against *Bacillus subtilus*, *Staphylococcus aureus* and *Escherichia coli*. The activity is comparable to that of Ciprofloxacin. Significant activity of the extracts and fractions against some enteric organisms like *Escherichia Coli* and *Salmonella typhi* is of particular interest. This may accounts for ethnomedicinal use of plant in management of diarrhea and typhoid fever. Activity against *Staphylococcus aureus* may justify the use in management of venereal disease.

Zubaydi *et al.* (2009) studied the antimicrobial activity of water and alcoholic leaves extracts of *Ricinus communis*, and *Clerodendron inerme* and stem extracts of *Aloe vera* against gram positive *Staphylococcus aureus* and gram negative *Escherichia coli*.
and *Pseudomonas aeruginosa*. Results obtained from this study revealed that extracted compounds from *Aloe vera* stem and *Ricinus communis* leaves had high antibacterial activity against gram positive and gram negative bacteria. Flavonoid compounds showed the most effectiveness. No antimicrobial activity has been noted from cold and hot aqueous extracts of *Clerodendron inerme*.

Adegoke et al. (2010) studied the phytochemical screening and antimicrobial potentials of *Phyllanthus amarus* against multidrug resistant pathogens (*Staphylococcus aureus, Escherichia coli, Pseudomonas aeruginosa* and *Klebsiella* spp.) isolated from clinical samples. The susceptibility pattern of test isolates against the crude extract was determined at extract concentration of 10mg/ml, 50mg/ml, 100mg/ml and 150mg/ml respectively. The results revealed that the extracts did not inhibit the growth of *Escherichia coli, Pseudomonas* spp. and *Klebsiella* spp. at 10mg/ml. But largest zone of inhibition with ethanol extract was recorded with *Staphylococcus aureus, Escherichia coli* and *Klebsiella* spp. However isolates were subjected to antibiotics susceptibility testing and found to be resistant to gram negative and gram positive antibiotics. The observed antibacterial effects were believed to be due to presence of alkaloids, tannins and flavonoids identified in the extracts.

Mohammad et al. (2010) studied the in vitro antimicrobial activities of four medicinally important plants of Bangladesh. In this study, methanolic crude extracts and their crude fractions i.e. Petroleum ether, carbon tetrachloride, chloroform and aqueous soluble fraction of *Allamanda cathartica, Stereospermum personatum, curcuma zedoaria* and *Callistemon citrinus* were subjected for antimicrobial activity. All fractions were tested against different gram positive and gram negative bacteria and fungi to find their antimicrobial activity. Leaves extract of *Allamanda cathartica* and Rhizome extract of *Curcuma zedoaria* showed mild to moderate antimicrobial activity, where as highest activity was observed by chloroform soluble fraction of *Allamanda cathartica* against *Shigella dysenteriae* (13mm) and same activity of rhizome methanolic extract of *Curcuma zedoaria* (12mm) against *Bacillus cereus* and *Vibrio parahaemolyticus* was noted. Choloroform solvent extract of *Stereospermum personatum* showed marked antibacterial activity against gram positive bacteria of *Sarcina lutea* (13mm) and gram
negative bacteria of *Pseudomonas aeruginosa* (13mm). Leaves carbon tetrachloride soluble fraction of *Callistemon citrinus* showed significant antimicrobial activity ranging from 11-16 mm zone of inhibition in diameter and its antimicrobial activity was highly significant especially against *Vibrio parahaemolyticus* (16mm), *Vibrio mimicus* (15mm) and *Saccharomyces cerevaceae* (14mm).

### 2.2 SCREENING OF PLANTS FOR ANTIMICROBIAL ACTIVITIES AT NATIONAL LEVEL;

Ahmad *et al.* (1998) screened 82 Indian medicinal plants that are traditionally used in medicine against several pathogenic and opportunistic microorganisms. Antibacterial activity of aqueous, hexane and alcoholic extracts of each plant were tested. Results indicates that out of 82 plants 56 exhibited antibacterial activity.

Acetone and alcoholic extracts of leaves of *Cassia alata* showed significant in vitro antibacterial activity against *Staphylococcus aureus* (coagulase positive), *Bacillus subtilus, Bacillus cereus, Escherichia coli* and *Salmonella typhi*. In addition the alcoholic extract also inhibited the growth of *Klebsiella pneumoniae*, where as acetone extract inhibited the growth of *Vibrio cholera*. Petroleum ether, chloroform, acetone and ethanol (95%) extracts of leaves of *Cassia alata* have significant in vitro antifungal activity against common pathogenic fungi that includes *Aspergillus niger, Candida albicans* and other (Sakhar *et al.*1998).

Maikhuri *et al.* (1998) studied the role of medicinal plants in traditional healthcare system from Nanda Devi Biosphere Reserve. Tolchha–Bhotiya sub community inhabiting there has strong faith & belief in traditional health care system, viz. herbal treatment. Twenty five plant species are generally being used along with other materials and plant products in different combination to cure fifteen major diseases. About eight or nine plant species are used for curing more than one disease. However for some rare and serious diseases like tuberculosis, rheumatism, internal wounds and fractures, a few people particularly those belonging to higher income group, prefer allopathic treatment. Since the knowledge of various medicinal plants being used in
herbal treatment and their method of use is confined to local practitioners –Vaidhya-it is of utmost importance to record this knowledge for future generations, otherwise it will be lost for ever in the process of acculturation, which is taking place in the community at an alarming rate.

Parkash, (1998) found that a few institute like Central Drug Research Institute Lucknow, with its concerted efforts have published result of 3488 species of plants for limited indication in almost 28 years between 1968-1996. This resulted some promising leads that were latter develop as a drug viz bacocide, the memory enhancer from Bacopa monneri (L); Penn: Picroliv, the hepatoprotective from Picrorrhiza kurroa (Benth); Curcumin the anti inflammatory from Curcuma domestica

Gopalkrishanan et al. (2000) studied the antimicrobial activity of extracts of Acalypha indica Linn. Dilution method was employed to determine the effect of petroleum ether, chloroform and methanolic extracts of dry leaves of Acalypha indica against fungi Candida albicans and bacteria Escherichia coli, Staphylococcus aureus, Pseudomonas aeruginosa, Salmonella typhosa, Bacillus subtilis and Klebsiella pneumoniae. Except the petroleum ether all the extracts exhibited prominent antibacterial activity. From the zones of inhibition produced by extracts it was observed that Staphylococcus aureus, Klebsiella pneumoniae, Salmonella typhosa, Pseudomonas aeruginosa, Escherichia coli and Candida albicans were most sensitive to chloroform extract. Acetone soluble fraction of fraction of methanolic extract exhibited activity against Candida albicans, Salmonella typhosa, Staphylococcus aureus, Pseudomonas aeruginosa, Bacillus subtilis, and Klebsiella pneumoniae.

Kansiram et al.( 2000) studied the antifungal activity of plant Calendula officinalis against Aspergillus niger, Rhizopus japonicum, Candida albicans, Candida tropicalis and Rhodotorula glutinis. The extracts of Calendula officinalis showed high degree of activity against all test fungi. All four solvents (Petroleum ether, Chloroform, Acetone and ethanol ) showed significant growth inhibition of all the fungal strains. The degree of growth inhibition ranged from 10 to 20 mm against for all test organisms and
was comparable with the Amphotericin-B and nystatin. Preliminary phytochemical screening has shown the presence of cardiac glycosides, sterols and flavanoids.

Puratchikodi et al. (2001) studied the antibacterial activity of *Cyperus rotundus* Linn. Acetone and ethanol extracts showed significant broad spectrum antibacterial activity against *Staphylococcus aureus, Escherichia coli, Bacillus subtilis, Pseudomonas aeruginosa* and *proteus vulgaris* at 50µg/disc at par with 30µg/disc of chloremphenicol using disc diffusion method. Ethanolic extract was found to be much more effective than others. These results suggest the presence of an active principle (s) with good antibacterial potency or a high concentration of moderately active principle in the extract.

Vashant et al. (2001) studied the antimicrobial activity of *Notonia grandiflora* in vitro activity against *Staphylococcus aureus, Shigella shigae, Salmonella typhi, Escherichia coli*

*Pseudomonas aeruginosa* and *Proteus mirabilis*. Essential oil of the fresh plant at 1: 10 dilution showed good activity against *Staphylococcus aureus, Shigella shigae*, and *Proteus mirabilis* amongst comparable to standard antibiotic used. The hexane extract of the plant showed good activity and alcoholic extracts showed feeble activity against *Proteus mirabilis*.

Oudhia et al. (2001) described the magical herbal decoction (Kadu pani) for body wash used by native of Chhattisgrah. This kadu pani is good against skin trouble common in festive. On the day of festival, the native worship the Goddess Laxmi, only having bath with kadu pani. For preparation of kadu pani, the native use Chirchita, Siliyari, Briyari, Memri and Bhachkatiya (*Solanum xanthocarpum*).

Ahmad and Beg, (2001), studied the ethanolic extracts of 45 Indian medicinal plants for their antibacterial activity against certain drug resistant bacteria and a yeast *Candida albicans* of clinical origin. Anti-candidal activity was detected in 24 extracts. Overall broad spectrum antimicrobial activity was observed in 12 plants. (*Lawsonia inermis, Eucalyptus sp, Holarrhena antidysentrica, Hemidesmus indicus, Casuarina equistifolia, Terminalia bellerica, Terminalia chebula, Emblica officinalis, Camelia*
No correlation was observed between susceptibility of test strains with plant extracts and antibiotic resistant behavior of microbial strains (*Staphylococcus aureus, Salmonella paratyphi, Shigella dysenteriae, Escherichia coli, Bacillus subtilis and Candida albicans*).

Shukla & Khanuja, (2002) study the chemical, Pharmacological and botanical studies on *Pedalium murex*. Various constituents isolated from different parts of *Pedalium murex*, Linn. have been described. These includes steroids, flavanoids, lipids, phenolics, polysacchrides & amino acids. Some useful activities reported from various parts of the plant and from isolated chemicals are diuretic, antiseptic, aphrodisiac and antibilious.

Balakrishanan *et al.* (2002) studied the antibacterial activity of aerial part of extract of *Achyranthes bidentata* against *Bacillus subtilus, Staphylococcus aureus, Escherichia coli* and *Pseudomonas aeruginosa*. The dried aerial parts were extracted with various solvents including petroleum ether, chloroform, Methanol and aqueous. Agar diffusion in particular cup plate method was used to test the antibacterial activity against gram positive and gram negative organism. The result revealed that plant posses very good antibacterial activity against four test organisms. Methanolic extract which shows best antibacterial activities against all test organisms as compaired to the reference standard Ampicillin.

Parihar *et al.* (2003) studied the antibacterial potential of *Cedrus deodara*. In view of rich diversity of Indian medicinal plants. It is expected that screening and scientific evaluation of plant extract for their antimicrobial substance may prove beneficial for mankind. Further synergistic interaction among crude extract or poly constituents in vitro may be useful in preparation of improved polyhedral drug formulation.

Rani *et al.* (2003) evaluated the antibacterial activity from Rhizome extract of *Acorus calamus* Linn., commonly known as sweat flag in different concentration of petroleum ether extract (500--2000µg) were tested. Antibacterial activity was observed from 500µg and zone of inhibition was found increased with concentration. The maximum activity was observed at 2000µg, and beyond this zone of inhibition did not
increase. Among the four types of bacteria tested, high inhibition zone was observed on *Pseudomonas aeruginosa* (1.62 cm), followed by *Staphylococcus aureus* (1.62 cm), *Escherichia coli* (1.34 cm) and *Bacillus subtilis* (1.04 cm). Minimum inhibitory (MIC) test showed that it was 0.25 mg/ml for *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Bacillus subtilis* and 0.5 mg/ml for *Escherichia coli*.

Aggarwal *et al.*, 2004; studied the inhibitory effect of plant *Boerhavia diffusa* Linn. against the dermophytic fungus *Microsporum fulvum*. In this study root extract of plant was tested against mycelial growth of *Microsporum fulvum* and reported a significant inhibition in the diameter of fungal colony. Petroleum ether extract of aerial and root part did not show any noticeable activity while the remaining extracts (ethyl acetate, ethyl alcohol and aqueous) exhibited antifungal activity against *Microsporum fulvum*. Maximum inhibition (reduction in diameter) in target fungal colony caused by various extracts of aerial part of the plant was about 14% (Chloroform), 16% (ethyl acetate) and 18% (ethyl alcohol) at test concentration of 5000 ppm with time exposure of 10 days, while 13% in aqueous solution with 20% dilution at same time interval.

Poonkothal *et al.* (2005) studied the antibacterial activities of *Gymnema sylvestre*, *Couroupita guianensis* and *Withania somnifera* against *Bacillus subtilis*, *Staphylococcus aureus*, *Klebsiella pneumoniae*, *Pseudomonas aeruginosa*, *Escherichia coli* and *Salmonella typhi* by disc diffusion method. The result of this study support to a certain degree that plant evaluated both for animal and human diseases, and reinforce the concept that ethnobotanical approach to screening plants as potential source of bioactive substances.

Kumar & Sunder, (2005) studied the antidermatophytic activity of *Pistia stratiotes*. Dermatophytes belonging to three genera, *Trichophyton*, *Epidermophyton* and Microsporum were tested. They affect the keratinous tissue of human and other vertebrates causing superficial fungal infection. Methanolic extract was found to be most active against the dermatophyte *Trichophyton rubrum*, *Trichophyton mentagrophytes* and *Epidermophyton floccosum*, *Microsporum gypseum* & *Microsporum nanum*. *Trichophyton* and *epidermophyton* species are more resistant to the extract and were
inhibited at higher dosage compared to Microsporum species. The result of this plant indicate that leaves of Pistia stratiotes posses antifungal properties.

Lloyd et al. (2005) studied the anti-candidial activity of Azadirachta indica (Neem seed kernel). A total of ten different solvent extracts of neem seed kernels against Candida species. The extracts used were hexane, methanol, chloroform, water, petroleum ether, dichloromethane, acetone and ethanol. The MIC was tested by broth dilution method at concentration ranging from 1- 0.0625 mg/ml. 15 isolates of Candida species tested were from patients of HIV infection. The direct hexane and ethanol extract of seed kernel were best inhibiting 13 out of 15 strains. The ethanol extract of neem seed kernel and that of commercial oils showed similar activity. Ethanol extracts and Hexane extracts showed best results. All strains were resistant to methanol, chloroform and water extracts of successive extraction procedure. This study conclude that hexane and alcoholic extracts of neem seeds seems to be promising anticandidal agents.

Thangan et al. (2005) tested the antibacterial activity of honey (Agmark from khadi-craft, India) available in local market against 50 strains of Pseudomonas aeruginosa of which 30 isolates were from chronic suppurative otitis media (CSOM) patients, 12 from diabetic foot ulcer and 8 from burn wound infections. Pseudomonas aeruginosa ATCC 27853 were also included in the test. The MIC of honey determined by dilution method. Since Pseudomanas are recalcitrant to antibiotic therapy, the ability of honey to inhibit test isolate irrespective of their sensitivity pattern has important clinical implication.

Jigna et al. (2005) tested in vitro antimicrobial activity of aqueous and ethanol extracts of six medicinal plants used by traditional healers. Out of 12 extracts obtained from six plants, majority were active against gram +ve bacteria of which ethanol extracts were more active than aqueous. Plants includes Achyranthus aspera, (whole plant), Calotropis gigantea (Leaf), Carissa congesta (leaf), Fagonia cretica (whole plant), Mangifera indica (leaf) and Rauwalia serpentina (leaf). Aqueous extract of Achyranthus aspera could inhibit Staphylococcus epidermidis to a certain extend, while rest of the bacteria were resistant to aqueous and ethanolic extract of this plant. Aqueous extract of
Calotropis gigantea, could not inhibit any of the bacterial strains investigated except Proteus mirabilis. The ethanolic extract was most active against Klebsiella pneumoniae, Carissa congesta showed similar trends as that of Calotropis gigantea. The ethanolic extracts of Fagonia critica and Rauwolfia serpentina could inhibit some of the bacterial strains, while aqueous extracts of both plants did not show any activity at all. Mangifera indica both extracts displayed remarkable activity. Most susceptible bacteria were Klebsiella pneumoniae followed by Bacillus cereus, Escherichia coli and Alcaligenes fecalis. Salmonella typhimurium was the most resistant bacteria.

Avani & Neeta, (2005) studied the antimicrobial activities of Elephantopus scaber against various clinical microorganisms of species Bacillus, Micrococcus, Staphylococcus aureus Escherichia coli, Klebsiella pneumoniae, Pseudomonas aeruginosa and Streptococcus pyogen and found good results. They found that people of all continents and civilization used plants in one form & other like poultice or decoction. They also found the increasing interest of use of plant microbicides because of necessity of finding safer microbicides. Ethyl acetate and petroleum ether extracts were used for study. Ethyle acetate extract show inhibitory effect at 4 mg/ml concentration in all the bacterial isolates tested except Klebsiella pneumoniae, where it showed 75% inhibition. Inhibitory effect of petroleum ether was not found on any of culture except Micrococcus luteus where it show 50% inhibition at 2mg/ml and complete inhibition at 4mg/ml of concentration.

Jadeja et al. (2006) studied the herbal remedies used for haemoroids by tribals of Saurashtra, Gujrat and ethnomedicinal plants used by the people of Saurashtra in cure of Haemoroids. Result of survey indicate that 94 plant species represented by 82 genera and 52 families used for effective treatment, different parts of the plants such as bark, fruits, leaves, root, seeds etc are used. Out of 94 species leaves of 32.97% plants species are used followed by fruits (32.97), roots (18.08%)and seeds (5.31%). Western region of India is ethnobotanically very rich and phytogeographically a diverse terrain and plain offer immense scope for ethnombotanical studies. In this region of Gujrat many tribes from different ethnic group viz Rabari, Bharvad, Kangasia, Vaghari, Charan, Maher and other are found. Inspite of modernization process the rural folk and tribal of these areas
still hold on to their traditional faith and depend on indigenous plants for their various needs especially medicine.

Sahoo et al. (2006) evaluated in vitro antibacterial activity of aqueous, ethanolic, petroleum ether and chloroform extracts of Hybanthus enneaspermus Muell belonging to family Violaceae against urinary tract pathogen, Escherichia coli, Pseudomonas aeruginosa, Klebsiella pneumoniae, Proteus mirabilis, Enterococcus faecalis and Staphylococcus aureus by disc diffusion assay method and minimum inhibitory concentration was evaluated. Ethanolic (95%) extract exhibited significant and broad spectrum of inhibition in comparison to aqueous which shows the moderate effect. Chloroform and petroleum ether extract showed feeble effect at concentration 300 microgram/disc. Aqueous extract showed moderate inhibition against all tested UTI pathogens with maximum inhibition against Escherichia coli (25 mm) and minimum against Proteus mirabilis (15.2 mm).

Kanwar et al. (2006) studied the use of medicinal plants used in traditional healthcare prevalent in western Himalayas, The information was documented using questionnaire with the help of village elders, key informants and local healers. Thirty one plant species used by the villagers for treatment of various disease. It was found that elder people had more inclination towards herbal medicine followed by middle and young people. Since the knowledge of various medicinal plants being used in herbal treatment and their method of use is confined to mostly to local healers. It is of utmost importance to record this knowledge for future generation, other wise it will be lost for ever.

Suresh et al. (2006) studied the antibacterial and antifungal activities of some selected medicinal plants from Annamalai hills from district Coimbatore, Tamil Nadu. Promising results were obtained for antibacterial and antifungal activities from three plants species of Costus speciosus, Neolitsea scorbiculata and Ophiophogon intermedius. The antimicrobial activity against five bacteria includes, Staphylococcus aureus, Escherichia coli, Bacillus subtilis, Proteus vulgaris and Micrococcus luteus, Fungal strains includes Aspergillus niger, Aspergillus flavus, Aspergillus fumigatus, Aspergillus parasiticus and Trichderma viridi. The results of determination of inhibition of crude
extracts were compared with standard antibiotic Ciprofloxacin and Amphoterium. The antimicrobial activity of *Costus speciosus* showed the maximum antimicrobial activity against all bacteria and fungi. It shows inactive against *Bacillus subtilis*, *Proteus vulgaris* and *Aspergillus niger*. Meanwhile the *Ophiopogon intermedius*, shows minimum antimicrobial activity against bacteria as well as fungal organisms.

Deka *et al.* (2006) made a survey of medicinal plants used by tribal (Lalung) people of Mayong area, Morigaon district, Assam State. Total 68 plants species from 43 families were recorded which are used as medicine. Increasing demand of medicinal plants motivated rural people for their cultivation. Periodical field survey was done for one year Jan 2004 to Jan 2005 among the tribal (Lalung) hamlets of rural mayong area of Morigaon district, Assam state. Tribal people have very good knowledge and information about locally available medicinal plants for treatment of various diseases.

Rahman *et al.* (2006) studied some common medicinal plants used by Adivasi (Saontal) people of Dhubri district of Assam. A total of 38 number of species of plants from 28 families were recorded which are used as medicinal by the Adivasi people of Dhubri district where Adivashi are dominated. Some of the herbal medicines have been found to be very effective for the cure of diseases of female and children and thus play an important role. Increasing demand of medicinal plants has resulted in the rapid dwindling of these natural resources. Therefore there is strong need to conserve them, because they provide valuable medicine to tribal people.

Yadav *et al.* (2006) studied the folk medicines used in gynecological & other related problems by rural population of Haryana. Some ethnomedicinal observations made from the rural area of the state revealed valuable phytotherpeutic information on various gynecological disorders. Information on 52 plants with their botanical and vernacular names, family prescription with therapeutic doses and uses were presented. This study cover Rohtak, Jhajjar, Bhiwani, Mohindergrah, Rewari, Gurjeon, Faridabad and Sonepat districts of Haryana state. Ethnomedicinal data were recorded following the standard procedure interacting with herbal practiceners and elder women of the villages with knowledge of herbal medicine, use of 17 plant species for menstrual disorders, 15
species for leucorrhoea, 6 species for delivery problems, 5 species for gonorrhoea, 4 species for lactation trouble, 3 species for abortion and two species for miscarriage have been enumerated.

Patil & Bhaskar. (2006) studied the medicinal knowledge system of tribal of Nandurbar district of Maharastra state. Frequent visit to the tribal villages called Padas in the forest of Toranmal, Navapur, Dhadgaon, AK-Kalkuwa and Tolada region were made. Though some of the plants mentioned in this study are common medicinal plants. Some workers have reported them as useful for certain other disorders. Some workers have reported knowledge system of tribals medicine of Nandurbar region for mumps, lethargy and oozing of sticky saliva in cattle. The medicine used for cough and cold by the tribals of this district is very peculiar, Leaf paste of neem is applied externally to the body but no internal medicine is given. While Lablab bean seed powder is taken internally as well as applied on the forehead for cough and cold. Documents of tribal medicine will go a long way in providing lead to new drug development for various ailments.

Bhardwaj et al. (2006) study in vitro antibacterial activity of Takrarishta an Ayurvedic formulation against *Staphylococcus aureus, Salmonella typhi, Bacillus subtilus, Pseudomonas aeruginosa, Proteus vulgaris, Micrococcus luteus, Bacillus cereus, Escherichia coli, Shigella flexineri & Clostridium perfringicus* associated with gastero intestinal infection. Takrarishta and Takra showed antibacterial activity against all the bacterial strains in 100%, 75%, and 50% concentration. Water extract of Amla and Harda showed antibacterial activity against all strains except Pseudomonas aeruginosa while water extract of Marich exhibited antibacterial activity against *Staphylococcus aureus, Micrococcus luteus* and *Proteus vulgaris*. Those of Ajowan showed activity against *Micrococcus luteus* and *Bacillus subtilis*. A conjoint use of naturally occurring antibacterial substances and their formulation such as Takarishta may prove useful.

Jadhav et al. (2006) studied the ethno-medicinal plants used for cure of skin affliction by Bhil tribe of Ratlam district Madhya Pardesh, India. This study includes 25 plants based crude drugs for treatment of different types of skin diseases prevalent in Bhil tribe of Ratlam distt. Bhil tribe of the area totally depends on herbal drugs for their
primary healthcare which is attributed partly to heir socioeconomic and cultural conditions. No allopathic clinic prevails in the surrounding area. Some of these folk medicines have got incorporated in the organized system of medicine, but larger number of folk medicines remains endemic to certain region or tribes in the country. The knowledge of folk medicines accrued by local inhabitants through experience of ages and is passed on by words of mouth from generation to generation as a part of their cultural heritage. Survey will not only lead to discovery of new medicinal plants but also results in better understanding of relationship between local inhabitants or communities and modern science.

Parekh and Chanda, (2006) studied in vitro antimicrobial activities of extracts of Launaea procumbens Rox. (Labiateae), Vitis vinifera L. (Vitaceae), and Cypruss rotundus L. (cyperaceae). The result supports the traditional usage of studied plants and suggest that some of the plant extracts posses compounds with antimicrobial properties that can be used as antimicrobial agents in new drugs for therapy of infectious disease caused by the pathogens.

Khan et al. (2006) study the uses of medicinal plants in various disease by rurals and tribals of Vindhyas region. This area has a rich heritage of medicinal plants. It contains so many tribals viz. Gond, Kol, Baiga, Muria, Panika etc and other rurals. They cure various human diseases by using medicinal plants. A total of 33 species of medicinal plants belonging to 19 family and 23 genera has been studied. This region have a large range of dense forest and are out of doctor’s approach, so these people used plants for medicine as alternative of allopathic medicine for cure of various ailments.

Tomar and Singh, (2006) studied the ethnotherapeutics of some medicinal plants from Khatauli block of Muzaffarnagar district (U.P), India. People were interrogated for first hand information. Survey was conducted from Jan 2005 to Jan 2006. Data were obtained from native informants who were Vadhyas and common people who have knowledge of therapeutic uses of medicinal plants. 30 taxa of medicinal plants were collected, these angiospermic plant species belong to 22 families and 29 genera. There are common belief to the villager regarding various types of diseases, However, sometime
variation in remedial measure are also observed. In most cases plant parts are taken as raw in the form of juice or decoction for internal administration while applied as juice or poultice in the external use.

Rani and Murty, (2006) studied the antifungal potential of flower head extract of *Spilanthes acmella* Linn. The result shows that flower head extract of this plant possesses remarkable fungi toxic activity against many human and agricultural pathogens. Thus there is a possibility of developing this plant as a source of antifungal agent. Different concentration of *Spilanthes acmella* flower head extract were evaluated for antifungal activity (0.1 to 2.0 mg). The diameter of inhibition zone ranged from 0.1 to 2.3 cm with the increase in concentration of test solution. In all the organisms the maximum zone of inhibition was observed at 2000 µg concentration. Among different fungal species, high inhibition zones were observed in *Fusarium oxysporium* and *Fusarium moniliformis* followed by *Aspergillus niger* and *Aspergillus paraciticus*.

Sumitra Chanda et al. (2006) studied the evaluation of antibacterial activity and phytochemical analysis of *Bohinia variegate* L. bark. The bark powder was defatted with petroleum ether. The non defatted as well as fatted plant material was then individually extracted in different solvents with increasing polarity viz, 1,4-dioxan, acetone, methanol, dimethylformamide (DMF) and distilled water respectively. Extractive value of the plant for non defatted extracts ranged from (0.7-13%) and for defatted extracts range from (1-10.5). Antibacterial activity of non-defatted and defatted extracts by agar well diffusion method at three concentrations i.e. 10 mg/ml, 5mg/ml and 2.5 mg/ml was determined. The test organisms included the gram positive bacteria, *Bacillus cereus* (ATCC 11778), *Staphylococcus aureus* (ATCC 25923), and gram negative bacteria *Klebsiella pneumoniae* (NCIM 2719) and *Escherichia coli* (ATCC 25922). *Pseudomonas psedoalcaligenes* (ATCC 17440). The antibacterial activity of defatted extracts was more than those non defatted. Maximum activity was observed at highest concentration i.e. 10 mg/ml. Defatted acetone and methanol extracts were most active than other extracts against all organisms. Petroleum ether extract was inactive against all test organisms. Phytochemical results indicate that plant contain alkaloids, tannins and saponin.
Karthikumar et al. (2007) screen the antibacterial & antioxidant activities of leaves of Ecliptic *prostrate*. He found antibacterial activity of hexane; Ethyl acetate and water extract effective against test organisms (*Escherichia coli*, *Klebsiella pneumoniae*, *Salmonella typhi*, *Pseudomonas aeruginosa*, *Bacillus subtilus* and *Staphylococcus aureus*).

Balakrishnan et al. (2007) studied the pharmacognostical and phyto-chemical evaluation of *Sida cordifolia* collected from Salem district of Tamilnadu. The plant has been used for various disorder and the medicinal value of this plant were known from ancient time. All the parts of this plant were found highly useful and among them root to be much useful. The plant is considered most valuable drug plant among Ayurvedic medicine and largely used by Hindu physicians from ancient time. The reported main constituents were phytosterol, ecdysteron and sitoindoside.

Chaudhary and Dulawat, (2007) make a ethnobotanical survey of Sita mata wild centuary lies in the civil district of Chittorgarh and Udaipur in South West region of Rajasthan state. A number of ferns growing in this area and are used either as fresh plant or in the form of dry leaves and rhizome by the tribal people. Puri, (1970); Dixit, (1975); describe medicinal uses and Gurung, (1979); Sharma and Vyas, (1987) describe ethnobotanical importance of fern and fern allies of Rajasthan. Bhardwaj et al. (1979); Bohra et al. (1980) have published the list of fern and fern allies of Rajasthan and reported 45 species. Recently Gena, (1998) have published systematic and taxonomy of pteridophytes of Rajasthan.

Jachak et al. (2007) Study the challenge and opportunities in drug discovery from plants and found that drug discovery from plants involves a multidisciplinary approach combining botanical, ethnobotanical, Phytochemical, and biological techniques. Plants continue to provide us new chemical entities (lead molecules) for development of drugs against various pharmacological targets, including HIV/AIDS, cancer, Alzheimer’s disease, malaria and pain. Several natural products drugs of plant products are in clinical use, including paclitaxel, camptothecin–derived analogues, arteether, galanthamine, tiotropium to name a few, and some are undergoing phase 11, and phase 111, clinical
trials. Proper utilization of these resources and tools in bioprospecting will certainly help in discovering novel lead molecules from plants by employing modern drug discovery techniques and the coordinated efforts of various disciplines.

Murudkar et al. (2007) studied the antibacterial activity of *Mimusops elengi* Linn bark against dental pathogen. Dried and powdered bark was extracted with various solvents and all the extracts were evaluated for physiochemical parameter and antibacterial activity by cup plate technique against different gram positive and gram negative microorganisms isolated from tooth tarter of dental patients. Chloroform extract at 200 mg exhibited prominent antibacterial activity against all the test microorganisms. *Streptococcus faecalis, Bacillus subtilis, Clostridium perfringens, Klebsiella pneumoniae, Pseudomonas aeruginosa, Escherichia coli, Salmonella paratyphi, and Streptococci*. Phytochemical analysis was done by TLC and HPLC method. The extracts of *Mimusops elengi* were found to contain alkaloids, saponins, flavonoids, tannins, and carbohydrates. The individual chloroform extract of bark revealed the presence of phytosterols and flavonoids.

Selvlakshmi et al. (2007) investigated the Pharmacognostical studies on *Sandhana vembu* (Toona ciliata). Pharmacognosy is an important link between pharmacology and medicinal chemistry. As a result of rapid development of phytochemistry and Pharmacological testing method in recent years new plant drugs are finding their way in to medicine as purified phytochemicals rather than in the form traditional Galenical preparations.

Bhattacharjee & Chatterjee, (2007) studied the used in skin disease in Deganga ,West Bengal, India .The ethnobotanical studies reveal some plant species used in skin diseases by oraon tribe of Chandanpur, Hadipur, Chupri village of Deganga, North twenty four paragana, West Bengal. Most of the plants were found to be unknown or less known from usage point of view. The plants studied includes *Aloe vera* L, *Argemon mexicana* L, *Cassia alata* L, *Lawsonia inermis* L., *Ocimum santum* L., *Pongamia pinnata* L. etc. Ethnobotanical studies were carried out in Twenty four pargana district of southern part of Bengal. Different ethenic groups have migrated from Bangladesh and
settled in this area and are agricultural and labourers. There is no modern facilities available in this area and migrated ethnic communities and tribals posses rich indigenous knowledge.

Kingston et al. (2007) studied traditional treatment of skin diseases in south Travancore, Southern Peninsular India. An ethnobotanical survey of South Travancore (Kanyakumari district) was conducted during 2003-04. The medicinal properties of each species was accepted as valid if at least 4-5 informants had a similar positive answer in their reply. Plant species which are used in traditional medicine are enumerated with their botanical and vernacular names (Tamil), family and used plant part in various treatment. 30 plant species belonging to 22 families and 29 genera were found effective for various skin disorders. Out of these 12 were tree 6 were shrub 15 herbs and 5 climbers. Fabaceae with 5 species was the dominant family followed by Acanthaceae, Caesalpiniaceae, Cucurbitaceae and verbenaceae which had two species each, whereas 17 families were monospecific. The present study has been information on 12 kind of skin diseases. 9 species were used for to treat all kind of skin diseases, 4 species in leprosy and 3 species in tinea versicularis and rest species for other kind of skin diseases.

Vinod et al. (2007) studied the medicinal plants used by Gond tribe of Dudhi district Sonebhadra Uttar Pardesh, India. Like other traditional and tribal societies in India,, Many gond households depend to a large extend on wild resources. The study indicate that the area was having rich floristic diversity and not only tribal inhabitants of the area but other people were also practicing herbal drugs for treatment of various ailments.

Rahman & Anwar, (2007) studied the antimicrobial activity of crude extract obtained from root of Plumbago zeylanika .Ethanolic extract of root was investigated against eleven human pathogens by disc diffusion method on Mueller Hinton agar. Zone of inhibition ranged from 8-10 mm in diameter with 250 microgms disc and 16-30 mm diameter with 50 microgms disc against test bacteria.

Ramkumar et al. (2007) Studied antimicrobial properties and phytochemical constituents of antidiabetic plant Gymnema montanum. In present study, five different
organic and aqueous extract of this plant leaves were screened for their phytochemical composition, antimicrobial and free radical scavenging activities. Among the different extracts tested Ethanol and hexane showed significant antimicrobial activity against Salmonella typhi, Pseudomonas aeruginosa and Candida albicans. Phytochemical analysis revealed that antimicrobial and free radical scavenging activities are mainly due to phenolic compounds especially alkaloids are responsible for antimicrobial activity. Results obtained suggest that Gymnema montanum could be exploited in the management of infectious diseases.

Verma et al. (2008) studied some ethno-medicinal plants used for various skin ailments in villages of Jhansi, India. Some plant posses antiseptic properties. The antiseptic properties of the plant may be antibacterial, antifungal, antiprotozoal, styptic, astringent etc. The antiseptic value of the plants is mainly due to certain phytochemical present in it. The plant parts are applied as a paste, juice on cuts wounds, boils, swelling etc. Internally it can be taken as decoction or extracted juice for dental, throat and skin disorders.

Sahu et al. (2008) studied the indigenous medicinal plants used in animal therapy by tribes of Ranchi, India. Ranchi the biggest district of Jharkhand state, covers a total of 7,69,800 hectares of geographical area, that includes 1,59,140 hectares of forest area, which is 20.67 % of the total geographical area of the district. Forests are rich in having enormous number of small plants to big trees with high medicinal properties. The indigenous / local people are well acquainted with such plants. He studied 22 plants species used as a ethno-veterinary medicine for treatment of various ailments in domestic animals. The therapeutic informations, method of drug preparation, application, doses, duration and other related informations were recorded through interview conducted with tribal herbal medicinal practiceners (horopaths),pahans, kotwars and other knowledgable person of locality.

Iqbal & Aggarwal, (2008) studied the medicinal plants used in the treatment of skin ailments in Palwana district of Kasmir, India. Twenty five plant species belonging to twenty family have been collected from different area of the district & have been
subjected for treatment of various skin diseases and resulted promising results. The tribes of the area are Gujjars and Bakerwals. These people depend upon local plants for treatment of various diseases as folk medicine. The plants are arranged alphabetically, followed by family, local name, part used, mode of preparation and administration. Wherever possible, and uses are based on traditional knowledge.

Radjalatchoumy and Sharavananan, (2008) studied the medicinal plants and its traditional uses in Auroville region of Tamil Nadu, India. Valuable data has been collected with knowledgeable local informants and herbal practiceners for the cure of many diseases. Herbal medicines helps us to cure some primary diseases like cold fever, wounds, headache, stomach pain, skin diseases and poisonous bite. Traditional healers are dwindling in number and there is a grave danger of traditional knowledge disappearing soon. Producing a traditional knowledge digital liabrary , an exhaustive database of medicinal plants.

Jadeja et al. (2008) made an ethnobotanical study which report traditional uses of different plant species by tribals of Gujrat in preparation of alcoholic beverages, utensils, musical instruments and house building. Fermented juice of Borassus-flabellifer is Tadi. It is very commonly used hard drink. Tadi and Tear Kaman are indispensable part in the life of Adivasi. Mahudi (from Madhuca longifolia) is another favorite hard drink of Adivasi. The dried flowers of this plant are sweet and eaten raw or they are dried and preserved as such. Strong alcoholic drink is prepared from these flowers by steam distillation. The use of plants in the preparation of local drink differs from one community to other. A few spoons of liquor are given to children in cold and cough. In some villages alcohol is smeared over the face and body parts as a beauty care products.

Jadeja and Madhvadiya, (2008) studied some medicinal plants of Vijapur taluka of Mahesana district of Gujrat, India. In north Gujrat region a number of medicinal plants have a long history of curative properties against various diseases. 43 plant species from 28 families used by indigenous people for several common diseases like bronchitis, diabetes, leprosy, diarrhea, cough, skin diseases etc were noted. The present study revealed that folk medicine is very important aspect of medical anthropology and is
rightly attracting attention. Folk medicine still remain alive as precious to the medical need of third world and herbal medicin continue to cather to the need of third world countries as it is considered to be almost free from side effect and coast effective. It is hoped that documentation of such information will play an important role in framing policies for people in general and for those living in tribal dominated region in particular.

Gupta et al. (2008) studied the wound healing activity of polyherbal formulation on excision based wound model in mice. A polyherbal ointment containing ethanolic extract of *Psidium guajava, Azadirachta indica, Cassia fistula* and *Argemon maxicana* was evaluated for its wound healing activity on excision based wound in mice. A polyherbal formulation showed increased in rate in wound constriction and decreased in period of epithelization in animals which may be attributed to its wound healing activity. This study mainly aim to detect the various means and factor influencing healing process. All these plants showed wound healing activity indivisually and the combination of all these plant showed much better results.

Nair et al. (2008) showed the antibacterial activity of *Punica granatum* L. stem. Aqueous and different solvent extracts of stem of this plant were evaluated for antibacterial activity against gram positive (*Staphylococcus epidermidis* and *Bacillus megatarium*) and gram negative (*Proteus morganii, Enterobacter aerogens* and *Alcaligene fecalis*) bacteria of ATCC strain. Aqueous extract did not show any antibacterial activity while organic solvent extracts showed different degree of activity against both type of bacteria. Most suscsptibale bacteria was *Proteus morganii* while *Enterobacter aerogenes* was most resistant strain. Thus the active component of the *Punica granatum* extract could be of interest for further development as antibacterial agents.

Ahire et al. (2008) made a survey of ethnomedicinally important plants from Igatpuri taluk of Nashik district, Maharastra state, India. Investigation present an account of different uses of plants belonging to 35 medicinal plants comprising 35 genera of 25 families used by tribals and villagers for treatment of various diseases. Survey was carried out in year 2006-07. The aim of the investigation is to enumerate the medicinal
plants used by tribals and rural people. It also indicate that there is urgent need to guide and trained the people to cultivate these medicinal plants so as not to put pressure on the forest for exploitation of natural vegetation.

Sriram et al. (2009) studied the phytochemical screening and antimicrobial activity of plant extracts of Mimosa pudica. This plant has been identified as Lajjalu in Ayurveda and has been found to have antiasthmatic, aphrodisiac, analgesic and antidepressant. The activity was tested against Aspergillus fumigatus, Citrobacter divergens and Klebsiella pneumoniae by well diffusion method at different concentrations. In case of methanolic extract it showed activity against test microorganisms at concentration of 50, 100 and 200 µg/disc. The maximum zone of inhibition was obtained in Aspergillus fumigatus and Klebsiella pneumoniae at concentration of 200µg/disc. Phytochemical found in this plant includes terpenoids, flavonoids, glycosides, Phenols, tannins, saponins and coumarin.

Bobbrala et al. (2009) Studied the antibacterial activity of three medicinal plants namely Adhatoda vasica, Cassia occidentalis and Phyllanthus amarus against the ocular infections causing bacteria Pseudomonas aeruginosa, Micrococcus lylae, Bacillus licheniformis, Staphylococcus hominis, Staphylococcus aureus, Staphylococcus haemolyticus, Micrococcus luteus, Bacillus lentus, Bacillus firmus and Pseudomonas stutzeri using agar well diffusion method. Among the three selected plants, Phyllanthus amarus exhibited remarkable bioactivity against Micrococcus lylae, Staphylococcus haemolyticus, Bacillus lentus, Bacillus firmus, Pseudomonas stutzeri, Pseudomonas aeruginosa and Staphylococcus aureus. The significant antibacterial activity of this plant might be due to the presence of saponin, alkaloids, tannins, cardiac glycosides and phyllanthin.

Jain et al. (2009) studied the antibacterial activity of aqueous leaf extracts of Mentha arvensis, Curcuma longa, Piper nigrum, Zingiber officinale and Azadirachta indica was evaluated against Escherichia coli and Bacillus subtilis by agar well diffusion method. The maximum antimicrobial activity expressed in term of zone of inhibition was shown by aqueous extract of Zingiber officinale followed by curcuma longa and Azadirachta indica. However, aqueous extract of Piper nigrum was only effective against
Bacillus subtilis and Mentha arvensis did not show any activity against both the tested organisms. This study scientifically validates the use of plants as a potent antibacterial agent.

Jayshree et al. (2009) studied the antimicrobial screening and phytochemical analysis of resin part of Acacia catechu. Kattha is used as a chewing ingredient, is a resin part of Acacia catechu. Agar diffusion method was selected to check the antimicrobial activity and excellent results with petroleum ether extract against Pseudomonas aeruginosa (10µg/ml) followed by aqueous extract against Bacillus subtilis (20µg/ml) and chloroform extract against Staphylococcus aureus (30µg/ml). Two major phytochemical constituents, epicatchin and quercetin were identified by HPLC as active ingredients in the extracts.

Das et al. (2010) studied the various techniques, current methods and future trends for the evaluation of medicinal plant products as antimicrobial agent. In this study it was concluded that beneficial medicinal effect of plant material basically results from the secondary products present in the plant and is not usually attributed to a single compound but a combination of metabolites. Phytochemicals may also specifically found in certain taxa of plants and vary in presence among different part of plant tissues. Various methods for evaluation of efficacy of plant extract i.e. in vitro antimicrobial susceptibility testing by agar disk diffusion assay, agar well diffusion assay, Poison food technique, spore germination assay has been worked out. Method for calculation of minimum inhibitory concentration (MIC) by broth microdilution and broth macrodilution has been described in detail.

Ahameethunisa and Hopper, (2010) studied the antibacterial activity of six organic solvent extracts of Artemisia nilagirica leaf against clinical and phytopathogenic bacteria by agar disk diffusion method. All the extracts showed inhibitory activity of gram positive and gram negative bacteria except Klebsiella pneumoniae, Enterococcus faecalis and Staphylococcus aureus. Hexane extract was found to be effective against all phytopathogens with low minimum inhibitory concentration of 32µg/ml and methanol extract exhibited a higher inhibition activity against Escherichia coli, Yersinia
enterocolitica, Salmonella typhi, Enterobacter aerogens, Proteus vulgaris, Pseudomonas aeruginosa (32 µg/ml), Bacillus subtilis (64 µg/ml), Shigella flexneri (128 µg/ml). The major includes Alkaloids, amino acids, flavanoids, phenol, quinine, tannin and terpenoids.

Kowti et al. (2010) studied the antimicrobial activity of ethanol extract of leaf and flower of Spathodea camnulata. Ethanol extract of leaf and flower was investigated for antimicrobial activity at 10mg/ml against gram positive and gram negative organisms like Escherichia coli, Klebsiella pneumonieae, Proteus vulgaris, Pseudomonas spp, Salmonella typhimurium, Bacillus subtilis, Staphylococcus and Vibrio cholera. After incubation for 24 hrs zone of inhibition was compared with standard antibiotics Gentamycin and Streptomycin (10 µg/disc). From the dose dependent study it was observed that ethanol flower extract was more potent than leaf extract. Flavonoids and tannins present in both ethanolic extract may be responsible for antimicrobial activity.

Periyasamy et al. (2010) studied the phytochemical screening and antimicrobial activity from five Indian medicinal plants against human pathogens. Medicinal plants includes Achyranthus aspera, Cassia senna, Wrightia tinctoria, Aristolochia bracteolate and Rauvolfia tetraphylla were examined using agar disc diffusion method against Escherichia coli, Klebsiella pneumonieae, Pseudomonas aeruginosa, Bacillus subtilis, Micrococcus luteus and Staphylococcus aureus. Plant leaves were extracted using various solvents such as methanol, ethyl acetate, aqueous and chloroform. Among the different extracts methanol extracts showed more antibacterial activity and moderate activity was recorded with aqueous, ethyle acetate and chloroform extracts. Achyranthus aspera showed maximum antibacterial activity against all tested bacteria than the other plants. All the bacteria were more susceptible to methanolic extracts than the other organic extracts. Phytochemical screening of these plants was performed for constituents: Alkanoids, flavonoids, tannins, anthrquinones, saponin, glycosides and volatile oils.

Srividya et al. (2010) studied the antioxidant and antimicrobial activity of Alpinia officinarum, rhizome belonging to family Zingeberaeceae, cultivated in South East Asia. Hydro alcoholic extracts by hot and cold maceration and methanolic extract by
percolation were subjected to antibacterial activities against gram positive & gram negative bacteria. All the three extracts showed moderate to potent antibacterial activity against *Bacillus ocereus*, *Staphylococcus aureus*, *Pseudomonas aeruginosa* and *Escherichia coli*. None of the extracts showed antifungal activity against *Aspergillus niger* and *Candida albicans*. 