In India from ancient time onwards plants were used for treating many ailments. Indians have a vast knowledge of medicinal plants and it is being used till now in Ayurveda and other traditional/folk medicines. India has 15 Agroclimatic zones and 17000-18000 species of flowering plants of which 6000-7000 are estimated to have medicinal usage in folk and documented systems of medicine, like Ayurveda, Siddha, Unani and Homoeopathy. About 960 species of medicinal plants are estimated to be in trade of which 178 species have annual consumption levels in excess of 100 metric tones. Medicinal plants are not only a major resource base for the traditional medicine and herbal industry but also provide livelihood and health security to a large segment of Indian population.

Herbal drugs are considered as less toxic, popular and are relatively free from side effects than synthetic one (Momin, 1987). Many of these medicinal plants and herbs are part of our diet as spices, vegetables and fruits. Historically, in 'Atharva-Veda' (about 200 B.C) description of medicinal plants was made under a separate chapter 'Ayurveda'. Sushruta (about 400 BC) complied classification of 700 herbal derugs under 37 classes in 'Sushruta Samhita' (A compendium of ancient Indian surgery). Charaka (about 600 BC.) made the scientific classification of herbal drugs based on remedial properties in his renowned treatise 'Charaka Samhita" (A compendium of general medicine) in which he described 50 classes of herbal remedies comprising 500 crude drugs (Saxena et al., 2006). The medicinal values of plants have been tested by trial and error method for a long time by different workers. Even today great opportunities are still open for scientific investigations of herbal medicines for cure of diabetes and its complications (Gupta et al., 2008).
Medicinal plant materials are characterized according to sensory and macroscopic characteristics. Shantha et al., (2006) carried out pharmacognostical and preliminary phytochemical studies on the leaf primordium of *Ficus bengalensis*. The study revealed the presence of simple starch grains, clustered calcium oxalate crystals, patches of rounded to polygonal stone cells with lignified cell walls, broad and narrow lumen, thick walled cells, abounded unicellular trichomes and brown tannin content.

Comparative phytochemical, microscopy studies were carried out on the genus *Khaya* by Ibrahim et al., (2006). Tannins and saponins were present in all the species while phenols were detected in all except *K. grandifolia*. Protein and anthraquinones were present in the bark of all the species.

Pharmacognostic investigation on fresh, powdered and anatomical sections of *Mitracarpus vilosus* (S.W) D.C was carried out to determine its macro morphological, micro morphological and chemomicromorphological profiles. Qualitative and quantitative studies indicated the presence of amphicribal vascular bundle arrangements, cone-shaped clothing trichome, entire margine, parallel venation and opposite/decussate arrangement. Other features include presence of calcium oxalate crystal, lignin and oil globules with palisade 4-7 and stomatal number of 13.5 (Jegede et al., 2005).

Akinmoladun et al., (2007) investigated that the aqueous and metanol extracts of *Chromolaena orderata* for the phytochemical constituents. Test for tannins, steroids, terpenoids, flavonoids and cardiac glycosides were positive in both methanolic and aqueous extracts. Alkaloids were detected only in the methanolic extracts.
Characterisation of preliminary phytochemical components of *Aframomum denielli* seeds was determined by Fasoyiro and Adegoke (2007). Phytochemical screening revealed the presence of alkaloids, cardenolides, carotenoids and polyphenols. All fractions obtained from the petroleum ether extract showed antimicrobial activity on food-borne pathogens.

John *et al.*, (2008) reported the crude ethanol extract, aqueous and chloroform fractions of the seeds of *Garcinia kolaheckel* (Guttiferae) for antimicrobial activity. The crude ethanol extract showed significant inhibitory activity against clinical isolates of both Gram negative organisms.

Chloroform and methanol extracts of root and shoot of the herb *Heracleum candicans* wall showed antibacterial activity against *Escherichia coli, Klebsiella* and *Pseudomonas* species only. Antifungal activity against six pieces of fungi, namely *Alternaria, Aspergillus, Fusarium, Penicillium, phytophthora* and *Pythium* was observed in petroleum ether and chloroform root extracts. Petroleum ether extract of shoot showed antifungal effect against five fungal species, namely *Alternaria, Aspergillus, Fusarium, Phytophthora* and *Pythium*. Methanol extract of root also showed antifungal activity against *Alternatia* species only. Similarly, methanol extract of shoot showed inhibitory activity against *Aspergillus* and *Pythium* species only. Such study justifies the claimed uses of this herb in the traditional system of medicine to treat various diseases (Kaur *et al.*, 2006).

Different solvent extracts (carbon tetrachloride, chloroform, acetone and methanol) of *Lenonurus sibiricus* were studied for their antibacterial activity. Carbon tetrachloride and chloroform extracts showed a broad spectrum of antibacterial activity (Ahmed *et al.*, 2006).

Methanol extracts of 23 plants were screened for their antibacterial activity against multi-drug resistance bacteria, viz. *Staphylococcus aureus, S. epidermis, Salmonella typhi* and *S. Paratyphi* to find out an alternative source of active principles/compounds. The

Antibacterial activity of leaf extract of *Adhatoda vasica* was studied against *Bacillus subitillis*, *Bacillus pumilus*, *Staphylococcus aureus*, *Micrococcus falvus*, *Staphylococcus epidermis*, *Salmonella typhimurium*, *pseudomonas aureofacines*, *Proteus vulgaris*, *Proteus mirabilis* and *Escherichia coli*. Antibacterial activity was determined by disc diffusion method and methanol extract was found to be effective against gram-negative microorganisms (Thaakur, 2006).

Thirty four Indian medicinal plants belonging to 28 different families were screened for potential antibacterial activity against three *Staphylococcus* species namely *Staphylococcus aureus*, *Staphylococcus epidermis*, and *Staphylococcus subflava*. Antibacterial activity of aqueous and alcoholic extracts was performed by agar disc diffusion method and agar well diffusion method. The alcoholic extracts were more active than aqueous extracts for all the plants studied. The most susceptible bacterium as *S. aureus*. The methanol extract of *Woodfordia fruticosa* showed the best antibacterial activity. The *in vitro* susceptibility testing of the *Staphylococcus* strains was done against standard antibiotics (Parekh and Chanda, 2008).

*Tinospora cordifolia* (Guduchi) is a widely used shrub in Folk and Ayurvedic systems of medicine. The chemical constituent reported from this shrub belongs to different classes such as alkaloids, diterpenoid lactones, glycosides, steroids, sesquiterpeneoide, phenolics, aliphatic compounds and polysaccharides. The notable medicinal properties reported are anti inflammatory and hepato protective activities (Singh *et al.*, 2003).
The anti-inflammatory and antimicrobial activities of the 95% ethanol extract, benzene fraction and isolated triterpenoids of *Strobilanthes callosus* were investigated by Singh *et al.*, (2002). In the carrageenan-induced paw edema inflammation model, the taraxerol showed a high reduction of edema but the antimicrobial effect observed was lower at the two doses employed. These results confirm the use of this plant in folk medicine as an anti-inflammatory and antimicrobial herbal drug.

Owolabi and Omogbai (2007) reported that the stem bark ethanolic extract of *Kagelia africana* has significant analgesic and anti-inflammatory activity. Inhibition of the synthesis of prostaglandins and other inflammatory mediators probably accounts for the analgesic and anti-inflammatory properties.

The study conducted by Radhakrishnan *et al.*, 2011 embelin from *Embelia ribes* berries of Indian origin was extracted and characterized by UV, NMR, thermal and X-ray diffraction analyses. Minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC) of embelin against both Gram +ve and Gram -ve bacteria were studied using micro dilution method and agar plate method by sub-culturing 10\mu l of the test dilutions from MIC tubes on to fresh Mueller-Hinton agar plates. About 1.9±0.1 gram of pure embelin was obtained from 100 gram of powdered berries (E.ribes). The characteristics study reveals the properties that are on par with the standard embelin received from Sigma (USA). With regard to antibacterial activity, embelin showed bactericidal activity against Gram +ve organisms, and bacteriostatic against Gram -ve organisms.

Khan *et al.*, (2010) studied that the antibacterial activity of aqueous and ethanolic extracts of *Embelia ribes* plant by disc diffusion and broth dilution techniques against gram-positive bacterial strains (*Bacillus subtilis, Staphylococcus aureus*) and gram negative bacterial strains (*Escherichia coli, Pseudomonas aeruginosa*). Results revealed that the aqueous and ethanol extracts of *Embelia ribes* exhibited significant antibacterial activity.
against gram-positive and gram negative strains with minimum inhibitory concentration (MIC) ranging from 1.5 to 100 mg/ml. The most susceptible organism to the ethanolic extract was *B. subtilis* and *P. aeruginosa*. The presence of phytochemicals such as alkaloids, tannins, triterpenoids, steroids and glycosides in the extracts of this plant supports their traditional uses as medicinal plants for the treatment of various ailments. The study revealed the potential use of these plants for developing new antibacterial compounds against pathogenic microorganisms.

In a study done by Chitra *et al.*, (2003) it was reported that embelin (100 μg) exhibited significant antibacterial activity against *Staphylococcus aureus*, *Streptococcus pyogenes*, *Shigella flexneri*, *Shigella sonnei* and *Pseudomonas aeruginosa*, however, it showed moderate zone of lysis against *Salmonella typhi*, *Shigella boydii* and *Proteus mirabilis*.

In a similar study done by Feresin *et al.*, (2003) reported that embelin inhibited both methicillin sensitive and methicillin-resistant strains of *Staphylococcus aureus* with MICs of 250 and 62 μg/ml, respectively, while the MIC for the methicillin-sensitive strain of *Staphylococcus aureus* was 2150 μg/ml. Moreover, the MIC for *Escherichia coli* was 50 μg/ml.

Areekuh *et al.*, (2009) reported antimicrobial activity (6.08%) for crude *E. ribes* extracts, while Schrader *et al.*, (2010) reported antibacterial activity against *Edwardsiella ictaluri* bacteria which cause enteric septicemia in channel catfish (*Ictalurus punctatus*) with MIC of >294.4 mg/ml.

Antifungal activity of *Embelia ribes* was evaluated on eight different fungal species by employing various concentrations of seed extract (0.5-2.0 mg). All the concentrations of seed extract inhibited the fungal growth, whereas maximum activity was observed at 2.0 mg
concentration of seed extract. Among different doses, the diameter of inhibition zones ranged from 9 to 18 mm in various fungal species and increased with the increase in the concentration of test solution. Among all the fungi, high inhibition zones were observed in *Colletotrichum crassipes* (18 mm). This was followed by *Cladosporium* (17.5 mm), *Armillaria mellea* (17 mm), *Colletotrichum capsici* (17 mm), *Aspergillus niger* (16.5 mm), *Rhizopus oryzae* (16.5 mm), respectively. *Aspergillus terreus* and *candida albicans* showed less inhibition zones (15.5 and 16.0 mm) compared to other organisms (Rani *et al.*, 2011).

Many researchers have found that plants contains secondary metabolites which posses many biological activity including antimicrobial activity. In a study conducted by Shyma *et al.*, (2012) it was found that *Chonemorpha fragrans* was more effective against *Staphylococcus aureus* than *E. coli*.

Kulkarni *et al.*, (2011) investigated that the ethanolic extracts of stem with bark and callus of *Chonemorpha grandifolia* for their antimicrobial activity. Callus extracts exhibited good antimicrobial activity against gram positive organism comparable with that of cephotaxime, the standard antibiotic. The antibacterial activity of stem with bark extracts may be assigned to the secondary metabolites ie. alkaloids, steroids and tannins present in the bark. The results revealed that higher percentage of alkaloids present in bark compared to callus. Callus showed comparable activity with that of stem bark extracts, though percentage of total alkaloids recorded in it was less. This may be due to the presence of other metabolites in callus or undifferentiated nature of callus.

In a study conducted by Prasad *et al.*, (2013), it was found that the methanolic extract and diethyl ether extracts of *Chonemorpha* showed antimicrobial activity against *S. aureus* and *E.coli*. But the aqueous extract of the plant didn't show any antimicrobial effect.
The methanolic crude extracts of *Chonemorpha fragrans* were screened for the presence of phytoconstituents and their ability to possess antimicrobial and a free radical scavenging ability using Chloramphenicol. The methanolic crude extracts of *Chonemorpha fragrans* were screened for the presence of phyto-constituents and their ability to process antimicrobial and free radical scavenging ability using chloramphenicol, cepheoperazone and ascorbic acid as respective standards. Antimicrobial activity was evaluated by Kirby-Bauer disc diffusion method and free radical scavenging activity was evaluated using 1, 1-diphenyl-2-picryl hydrazyl (DPPH) free radical and reducing power assay. The highest total phenol content was found to be in *Chonemorpha fragrans* with the value 88Â±0.121mg/g.

Singh *et al.*, (2013) investigated the antibacterial activity of *Chonemorpha* extract in methanol and it was found that *Chonemorpha* is showing activity against *E.coli* and *Pseudomonas aeruginosa*. The IC50 for *E.coli* was found to be 6.111 mg/ml and that of *Pseudomonas aeruginosa* was 5.855 mg/ml. The methanolic extract didn't show any activity against *S. aureus* and *Candida albicans*.

Embelin 50 mg/kg/day in combination with curcumin 100 mg/kg/day prevented the induction of hepatic hyper plastic nodules, body weight loss, increase in the levels of hepatic diagnostic markers, and hypoproteinemia induced by by N-nitrosodi-ethylamine in adult male Wistar rats. The osteoclasts are responsible for the osteolysis observed in bone metastases of the tumor. RANK L (Receptor Activator for Nuclear factor Kappa Light-chain enhances of activate B cells), a member of the TNF(tumor necrosis factor) super family and an activator of the NF-kB signaling pathway, has emerged as a major mediator of bone loss, commonly associated with cancer and other chronic inflammatory diseases.
Kedari and Malpathak (2016) screened the bioactive extracts of *Chonemorpha fragrans* for cytotoxicity potential and inhibition studies of key enzymes involved in replication. MTT assay showed that the chloroform extract of callus has potent anticancer potential. The plant has a promising anticancer activity against human colon epithelium, lung carcinoma, and epidermoidal carcinoma cell lines. It was found to possess Topo as well as DNA polymerase inhibitory activity.

Kulkarni *et al.*, (2010) have revealed the presence of steroidal alkaloids, such as chonemorphine and funtumafrine in *Chonemorpha*. Camptothecin, a well-known anticancer alkaloid has been detected in ethanolic extracts of stem with bark and callus cultures derived from *Choemorpha*.

Kedari *et al.*, (2013) have isolated camptothecin from hairy roots of *Choemorpha fragrans*. The study proved that *Chonemorpha fragrans* is a potential plant for camptothecin production.