The use of plants is as old as mankind itself. The plant kingdom has served as a source of food, drugs, fuel, flavouring agents, gums etc. They have been used since times immemorial in virtually all cultures as a source of medicine. The present knowledge about the usage of medicinal plants is a result of many years of research and is based on different medicinal systems such as Ayurveda, Unani and Siddha of which Ayurveda is most important. Ayurvedic medicine is the oldest medical system in the world with written records in Sanskrit dating back at least 5000 years. Ayurveda means ‘Science of life’ because ancient Indian system of health care focussed views of man and his illness. It had played a vital role in the life of ancient people as they were more or less dependent on it for the cure of various ailments. Even today the Ayurvedic system of medicines is widely practised not only in India but also in developed countries like USA and Japan.

According to World Health Organization (WHO) any plant which contains substances that can be used for therapeutic purposes or which are precursor of chemo-pharmaceutical semi synthetic new drugs is referred as medicinal plant. They may belong to any of the habits e.g. flower and fruit bearing plants, creepers and grasses etc. comprising of leaf, stem, bark, root, tuber, rhizome, flower, fruit exudates etc. Medicinal plants have been found useful as antimalarial, antisickling, antihelminthic, antimicrobial, antihypertensive and antischistosomal agents.

According to World Health Organization medicinal plants would be the best source to obtain a variety of drugs. About 80% of individuals from developed countries use traditional medicine, which has compounds derived from medicinal plants. Therefore, such plants should be investigated to better understand their properties, safety and efficiency (Boer et al., 2005).

It is estimated that about 250-500 thousand of plant species exist on the earth and only 1-10% are used as food by humans and other animals. Plant extracts are
highly efficient against microbial infections. It is estimated that around 70,000 plant species, from lichens to tall trees, have been used at one time to other for medicinal purposes (Purohit and Vyas, 2004).

The Indian subcontinent is a vast repository of medicinal plants that are used in traditional medical treatments. Some common examples of usage of medicinal plants include the use of root extracts of Abrus prectorius against krait bite, use of leaf parts of Azadirachta indica against viper bites. The use of leaves of A. indica to keep mosquitoes away is an old practice. There are also ample evidences of the usage of Aloe vera in treating skin burns and other epidermal infections. Lawsonia inermis has been used for its blood purifying and wound healing properties.

It is estimated that majority of the western drugs are based on plant materials. Many commercially proven drugs used in modern medicine were initially used in crude form in traditional healing practices.

Plants have the ability to synthesize a wide variety of chemical compounds that are used to perform important biological functions and to defend against attack from predators such as fungi, insects and herbivorous mammals. Many of these phytochemicals have beneficial effects on long-term health when consumed by humans, and can be used to treat human diseases effectively. The most important of these phytochemicals of plants are alkaloids, tannins, flavonoids and phenolic compounds. At least 12,000 such compounds have been isolated so far; a number estimated to be less than 10% of the total (Tapsell 2006 and Lai 2004). Various examples of phytochemicals in biology and medicine include taxol, vincristine, vinblastine, colchicine as well as the Chinese antimalarial - artemisinin, and the Indian ayurvedic drug-forkolin. All these have proved to be of great importance in medical system.

Today more and more number of people are getting attracted towards the use of plants to treat various infections because they have realized that the effective life span of antibiotics is limited and they may also lead to a number of side effects. One more important reason that is pushing us towards the use of medicinal plants is the
emergence of antibiotic resistant bacteria. The resistance of the organisms increased due to indiscriminate use of commercial antibacterial drugs commonly used for the treatment of infectious diseases. These antibiotic resistant bacteria have posed a great risk before the medical fraternity. The primary benefit of using plant derived medicines are that they are relatively safer than synthetic alternatives, more specific, biodegradable and are supposed to have fewer side effects. They may also combat the increasing costs of personal health maintenance. Therefore, there has been a growing interest in research concerning alternative natural antimicrobial agents, including the extracts and essential oils from various species of edible and medicinal plants, herbs, and spices that are relatively less damaging to human health.

Most ethnobotanical research has focused for many years that activity of plants is mainly due to the presence of single active constituent, but traditional system of medicine like Ayurveda assumes that therapeutic efficiency of plants is a result of many active ingredients. Betoni et al., 2006 demonstrated that plants either contain antimicrobials that can operate in synergy with antibiotics or possess compounds that have no intrinsic antibacterial activity but may sensitize that pathogen to a previously ineffective antibiotic. Synergism enables the use of respective antibiotic when it itself is not exerting any effect on the pathogen. Thus the screening of crude plant extracts for synergism with antibiotics may provide ways to inhibit the resistant bacteria. Drug synergism between known antimicrobial agents and bioactive plant extracts is a novel concept and has been recently reported (Nascimento et al., 2000).

There is global resurgence in traditional and alternative health care systems resulting in world herbal trade which stands at US$ 120 billion and is expected to reach US$ 7 trillion by 2050. The world market for plant-derived chemicals – pharmaceuticals, fragrances, flavours, and colour ingredients, alone exceeds several billion dollars per year. Indian share in the world trade, at present, however, is quite low.

The market and public demand has been so great that there is a great risk that many medicinal plants today, face either extinction or loss of genetic diversity. Trade in medicinal plants is growing in volume and in exports. Despite the increasing use of
medicinal plants, their future, seemingly, is being threatened by complacency concerning their conservation. Reserves of herbs and stocks of medicinal plants in developing countries are diminishing and are in danger of extinction as a result of growing trade demands for cheaper healthcare products and new plant based therapeutic markets in preference to more expensive target-specific drugs and biopharmaceuticals. Such concerns have stimulated positive legal and economic interest.

Keeping the aforesaid in view, the present study was undertaken with the following objectives:

1. To study the antimicrobial activity of various forms of plant material.

2. Comparative studies/analysis of different types of plant extracts.

3. Photochemical analysis of various extracts and to analyze the HPLC/GC-MS profile of few best studied antimicrobial plant material.

4. To study the synergistic effect of various plant extracts and antibiotics.