Because of population explosion, nutritional insufficiency of food products, fast food habits, industrialization and pollution, the inhabitants of this planet are frequently exposed to various diseases. To control these diseases various conjugate molecules and allopathic drugs are used which create several health problems followed by decrease in immune power of people. This causes imbalance of *vata*, *pitta* and *kapha* leading to the psychosomatic disorders, which prompt to develop most of the Ayurvedic drug formulations, these produce composite herbal effects on human body resulting in improvement of immunity. In India, Ayurvedic medicines have quite complex formula with 30 or more ingredients, including a sizable number of ingredients that have undergone ‘alchemical processing’ to balance *vata*, *pitta* and *kapha*.

Medicinal plants and herbal remedies are components of *Ayurveda* in India, since time immemorial i.e. history of herbal remedies is very old. Plants have served as man’s weapons against various diseases (Ayyangar and Ignacimuthu, 2005). Traditional medicine has remained as the most affordable and easily accessible source of treatment in the primary healthcare system of poor communities and the local therapy is the only means of medical treatment for such communities (Haile and Delenasaw, 2007). About 64 % of the world population (Farnsworth, 1994) and 65 % Indian population is dependant on traditional medical practice for the health care among all the existing medical practices today. Japanese, Chinese and and Korean systems of medical practice consist of plenty of medicinal plants. Various authors have given valuable information regarding traditional medicinal plants (Chopra *et al*., 1956, Sindiga, 1994, Ayyangar and Ignacimuthu, 2005, Rajendran and Agarawal, 2007).

The practice of traditional medicines alongwith phytomedicines therapy designated as herbalism is based on the applications of herbal medicinal plant extracts. The medicinal plants synthesize various aromatic and polyphenolic secondary metabolites as phytochemicals which are essentially required for human health (Lai, 2004, Tapsell, 2006). The system of traditional medicine is based on the knowledge of social local groups to solve their health problems. These practices are sometimes strongly related to religious belief and cultures and due to its economically affordable cost, these
are applied as alternative medicines. Hence, the phenomenon of herbalism is continuously evolving.

Plants synthesize a bewildering variety of phytochemicals but most are derivatives of a few biochemical motifs (Springbob and Kutchan, 2009). Phytochemicals, in the form of pure compounds or as standardized plant extracts, offer untrammeled opportunities for new drug targets because of the unmatched availability of chemical diversity (Parekh and Chanda, 2007). Medicinal plants are a fabulously rich source of diverse functional phytochemicals and metabolomics and are proving valuable in an applied context. Recent upsurge in the use of herbal medicines due to toxicity and side effects of allopathic medicines. This has led to sudden increase in the number of herbal drug manufacturers. Various pharmaceuticals currently available to physicians have a long history of use as herbal remedies, including opium, aspirin and quinine. It is reported that about 8000 species of medicinal plants are recognized for their ethnomedicinal importance and many of them are considered to be promising drugs in an alternative medical system (Anonymous, 1994).

Medicinal plants are rich in bioactive metabolites which cumulatively act upon the disease hence a hazardous effect of a single phytochemical is passified by other phytochemicals in that plant (http://ayurveda.ygoy.com/2009/07/31/charaka-samhita/). In recent days, the number of people demanding the herbal medicines is ever increasing. But till today, there are lots of medicinal herbs whose phytochemical active compounds are not known, till then people especially tribals and traditional practitioners use the herbs for medicine, which we can consider as somewhat risky for human health (http://ayurveda.ygoy.com/2009/07/31/charaka-samhita/). At least we must know the metabolic profile of that herb which is going to be used as an herbal medicine. In brief, it is the need of time to reveal the phytochemistry of the medicinal herbs as well as proper clinical testing of those herbs and herbal formulations which are used by traditional healers (http://ayurveda.ygoy.com/2009/07/31/charaka-samhita). There is also an urgent need of discovery of new bioactive target compounds with diverse chemical structures and novel mechanisms of action for new and re-emerging diseases (Krishnaraju et al., 2005). In recent days, plant secondary metabolites (phytochemicals), previously with
unknown pharmacological activities, have been massively investigated as a fountain of medicinal compounds (Krishnaraju et al., loc cit).

Current status of manufacture of medicinal plants in India indicates that manufacturers have to stress on various standardization processes to establish Indian products in the global market as the India is the second largest country in export of traditional medicines and medicinal plants (Nandi, 2010). Production of quality materials, analysis of raw materials for authentification, organoleptic evaluations, microscopic examinations, extractive values, chromatographic profiles, pesticides residue, heavy metal detection etc. are necessary steps for standardization and quality control of herbal drugs. Additionally, standardization methods of medicinal plants and their extracts have great importance in the fields of cosmetics and neutraceuticals, which are two most important emerging segments in the global market (Nandi, loc. cit.). It is necessary to set up world standard research and development facilities since the flavourists and perfume experts are facing the challenging tasks of creating and developing complex compositions to meet the present and future consumer demand. It is also necessary to integrate modern knowledge with traditional knowledge.

Bone is a homeostatic and metabolically active organ receiving about 10% of cardiac output constituting important part of the skeleton (Teotia and Teotia, 2008). The osteopathy is related to the bone disorders, which is caused due to the metabolic changes, deformities and consequences of deficiencies in vitamin D and calcium content. Thus, it is essential to maintain mineralization and calcium homeostasis for better structural integrity and health of skeleton. The various minerals like calcium, magnesium, manganese, copper, phosphorus and zinc as well as vitamin C, K and D are essentially required for bone health. The problems of bone disorders are noticed in various countries due to the side effects of synthetic drugs. To resolve these problems, various phytomedicines and plant originated composite herbal formulations are proving beneficial. Thus, it is essential to screen, analyze and standardize medicinal plants. Gaikwad (2004) and Selvam (2007) recorded that the leaves of A. cobbe are used in the treatment of bone fractures and other such disorders while the juice of the leaves is used to relieve rashes. Leaves ground with quick lime are applied to relieve stomachache.
Roots are used to check diarrhoea (Selvam, 2007). Yadav and Sardesai (2002) reported that leaves of A. cobbe and A. serratus are supposed to be useful as a medicine against bone fractures. In Sri Lanka, in traditional orthopaedic treatments, the bandages prepared from bark of A. cobbe, peeled down towards the roots, are tied over the fractured bones or injured area (Edireeweera and Grerub, 2009). The various plant parts of Allophylus are used by local people from various regions of the World. A. cobbe and A. serratus are the species which are found in nearby forests of Kolhapur and their leaves are used for various medicinal purposes especially wound and fracture healing. Young leaves are also consumed as a vegetable. In the present investigation, an attempt has been made to study the phytochemical, pharmacological and biotonic potential of the leaves, stem and root of these two medicinally important plant species.

The thesis has been divided into four chapters. As systematic and collective information on different aspects of Allophylus is not available, we have taken a detailed literature survey on taxonomical, ethnobotanical, pharmacological, physiological and phytochemical aspects of two species of Allophylus, which is a part of chapter ‘I’ i.e. ‘Review of Literature’. Second chapter is ‘Material and Methods’ which includes description of plant material used for various experiments and methodologies applied for those experiments. Chapter III, ‘Results and Discussion’ includes the findings of the present investigation, discussed in the light of recent and pertinent literature. The significant findings are briefly summarized in fourth chapter under the title ‘Summary and Conclusions’. The literature cited in the thesis is systematically presented in the last part of thesis, ‘Bibliography’.