CONCLUSION

Majority of people on this earth still dependent on their traditional wealth i.e., medicinal plants and other material for their everyday primary health care needs. Most of the indigenous traditional knowledge (ITK) about medicinal plants was available in the oral form that had been lost with persistent invasions, cultural adaptations and induction of modern amenities. There was no uniform, systematic or standard procedure for maintaining the inventory of these plants and knowledge in respect of medicinal properties. Therefore, efforts were made in the present study to invent in-depth research on the topic entitled “Studies on ecological, taxonomic, ethno-botanical and chemotypic variations in ‘Oregano’ (Origanum vulgare L.) and prospects of its cultivation”.

Quantitative information i.e., habitat assessment on species availability in different locations of O. vulgare was not available. As quantitative information on a species plays a vital role in formulating a conservation plan and understanding the ecology of species. Therefore the current work on O. vulgare presents the phytosociological behaviour of the species among different natural populations in the Indian Himalayan Region (IHR). This study will be helpful to understand ecological complexity of not only O. vulgare, but also other associated threatened and commercially viable species.

Taxonomical study was carried out with a vision to identify economically setup standards that could be beneficial for detecting the authenticity of this economically viable medicinal plant. Numerical standards reported in this work could be useful for the compilation of a suitable monograph of O. vulgare L. Identification of elite or superior genotypes those have high probability of detecting potentially useful genes for plant breeding is an essential requirement for quality improvement and conservation of plant genetic resources (PGR). Microscopic evaluation and characterization i.e., stomatal number, stomatal index, palisade ratio and trichome numbers etc. of Oregano leaf were carried out for standardization of crude drug. This
kind of parameter i.e., standardization used to avoid adulteration in crude drug and strengthen the pharmaceutical industries for potential and genuine material.

The present dissertation work offers a multidimensional approach to investigate diversities within a collection of *O. vulgare* L. based on quantitative agronomic and morphological traits.

Ethno-botanical study of oregano can be accomplished multi-utility for socio-economic aspects and cultural development of local inhabitants of higher reaches of the Himalayan region. Further the study is very important for the scientists, scholars, development workers, environmentalists and pharmaceutical industries to investigate further avenues of development on their respective lines. It is also concluded that the traditional pattern of utilization and knowledge is very much based on scientific principles or we can say that the traditional knowledge of the local communities paves the way for scientific investigation.

In Ayurvedic Pharmacopoeia of India, no detailed physico-chemical parameters and standardisation studies of this plant (API, 2001) is mentioned. Therefore, the present study is an attempts to evaluate the physico-chemical parameters. However, literature revealed the physico-chemical parameters, Pimple et al., 2012 studied microscopic evaluation and physico-chemical analysis of *O. majorana* L. leaves and in comparison of present *O. vulgare*, the values of physico-chemical parameters were recorded meagrely. The systematic biochemical and phyto-chemical investigations not only helped in revealing the active components, but also helped in synthesis of better and innovative analogues of various active principles isolated from plants. Thus, the present study helped in identification of the superior/ elite genotype plant material. Correct identification and quality assurance to ensure reproducible quality of herbal medicine which will contribute to its safety and efficacy.

Study of chemo-taxonomy, showed that the various populations of Oregano developed in various localities or agro-ecological settings in Uttarakhand Himalaya. Some of them were identified as superior or elite chemotypes. A prime target for selection of these chemotypes is very useful for the production of essential oils to meet the high requirement of pharmaceutical industries. Wild populations of
*O. vulgare* have been studied in order to identify the attributes responsible for various kinds of variability of the taxon. The earlier studies on Oregano did not mentioned the information on its phyto-geographical, characteristic features, ethno-botanical uses, essential oil composition, conservation status, diversity pattern and indigenous medicinal importance.

For large-scale production of planting material of *O. vulgare*, suitable agro-techniques or propagation methods were explored to obtain the production through its cultivation in farmers fields. Observation was aimed to identify the degree of variability existing in nature and selection of elite germplasm for domestication purpose. Based on the performance of plant types their survival, plant growth and economic yield, the elite populations were identified for the purpose of domestication and multiplication of germplasm. The cultivation of Oregano will not only protect particular species in natural habitat, but will also enhance the economic status of growers. The results of present investigation will be helpful for the formulation of conservation strategies of Oregano in future. Domestication of the plant species is urgently needed for saving them from extinction and also in the managed ecosystem is recommended for getting benefits of biological, pharmaceutical and scientific values.

The Oregano can be used to improve the livelihood of the local inhabitants by preparing value added products etc. Most of the accessions/sample of Oregano were distributed in diverse habitats while, some accessions were restricted to some particular habitats. The population of Oregano plant community is facing threats due to habitat degradation, grazing and other biotic pressures. Hence, adequate conservation and management strategies need to be developed for sustainable utilization of this valuable natural plant genetic resource.