5. SUMMARY

India enjoys the privilege of having time tested traditional systems of medicine based on the natural products. These traditional Indian systems of medicine like Ayurveda, Unani, Atharva Veda etc are involved in dispensing of herbal and plant products in various forms such as powders, extracts and decoctions. In recent decades there has been a vigorous efforts within India to conserve, document and promote the knowledge of plant drugs and to develop pharmacological research programmes for the benefit of traditional and modern medicinal systems.

Amritsar is an export hub of North-West India dealing in export of a large number of products, raw materials, crude drugs and medicinal plants. After searching the detailed review it was found that no specific information is available on the plants of district Amritsar. Though most of the species found have already been recorded and described in various flora’s and botanical reports of the present and erstwhile state of Punjab and the adjoining areas. Though the plants of Punjab mentioned in various flora etc. have served as general means of reference yet none of these have proved sufficient to fulfil the need of the students, teachers and medicine based professions in Amritsar. It is with this aim of contributing to this void of knowledge, that the present study of medicinal plants of Amritsar district was undertaken with the following objectives:

- To survey existing medicinal flora (wild and cultivated) of Amritsar district.
- To collect, describe and identify medicinal plants and their preservation in the form of herbarium sheets.
- To compile therapeutic properties of the plants from literatures, local people, herbal doctors, internet etc.
- To photograph plants in flowering/fruited season so as to focus on the complete plant and its parts of medicinal importance.
- To document the use of these plants in various Ayurvedic formulations being undertaken by different companies.
Amritsar is one of the border districts of North-West frontier of Punjab state. The city lies at 31° 38’ N latitude and 74 ° 53´ E longitudes with an average elevation of 234 m. Administratively Amritsar district is divided into seven Tehsils i.e. Ajnala, Amritsar-I, Amritsar-II, Baba Bakala, Khadur Sahib, Patti and Tarn Taran which covers an area of 5094 sq km. The territory of the district is oblong in shape, lying between the rivers Ravi and Beas.

During the present investigation, the survey of medicinal plants of Amritsar district was started in August, 2004 and completed in March, 2010. From all the seven tehsils mentioned above, 8-10 villages were surveyed at random. The field trips to different localities were undertaken during all the four seasons of the year - viz. summer, rainy, autumn and winter. A total of 181 species of medicinal importance have been identified which are either used indigenously for the treatment of various diseases, or are reported in the literature to have medicinal importance. These plants include trees, shrubs & shrubby climbers, undershrubs and herbs & herbaceous climbers. For each species, information has been provided for valid scientific names (printed in bold italics), followed by local (Punjabi) names, common (English) names, name of the family, distribution in India, brief morphology of the plant, flowering/fruiting season, chemical constituents, medicinal uses, and other ethnobotanical uses (if any), author’s collection number, and locality of collection. During the field trips, plants were photographed in their flowering/fruiting season so as to focus on the complete plant and its parts of medicinal importance. Personal contacts were made with the local people, including traditional healers, old persons, traders of herbal drugs and other local inhabitants who are involved in indigenous uses of plants in traditional health care systems. Uses of plants other than medicinal were also noted from these people. Plant species used indigenously in the study area by the local people in the treatment of various ailments and put to other ethnobotanical uses have been described. Complete field notes were prepared regarding habit, habitat, plant height, flowering, fruiting season, date of collection and locality name. The dried plants were poisoned and pasted on herbarium sheets following standard procedures and deposited in the Herbarium of Department of Botanical & Environmental Sciences, Guru Nanak Dev University, Amritsar (India). Various medicinal plants have
been described separately under different life forms such as a) trees; b) shrubs and shrubby climbers; and c) undershrubs, herbs and herbaceous climbers.

(A) **TREES (43)**

(i) **Cultivated trees (40)**

The cultivated trees of medicinal importance found to grow in Amritsar include: *Acacia nilotica*, *Aegle marmelos*, *Anthecephalus cadamba*, *Alstonia scholaris*, *Azadirachta indica*, *Bambusa bambos* *Bauhinia variegata*, *Bombex ceiba*, *Carica papaya*, *Casuarina equisetifolia*, *Cassia fistula*, *Chukrasia tabularis*, *Cordia dichotoma*, *Dalbergia sissoo*, *Emblica officinalis*, *Erythrina variegata*, *Eucalyptus citriodora*, *Ficus benghalensis*, *Ficus carica*, *Ficus racemosa*, *Ficus religiosa*, *Grewia asiatica*, *Mangifera indica*, *Melia azedarach*, *Mimusops elengi*, *Moringa oleifera*, *Morus alba*, *Plumeria rubra*, *Polyalthia longifolia*, *Populus alba*, *Psidium guajava*, *Putranjiva roxburghii*, *Syzygium cumini*, *Tamarindus indica*, *Tectona grandis*, *Terminalia arjuna*, *Terminalia bellerica*, *Terminalia chebula*, *Toona ciliata* and *Zizyphus mauritiana*.

(ii) **Wild trees (3)**

The wild trees usually grow in the natural and man made forests on road sides and in other waste and abandoned places. The wild trees are: *Butea monosperma*, *Prosopis juliflora* and *Albizia lebbek*.

(iii) **Both cultivated and wild (9)**

There are a few species of trees which are cultivated at few places but also grow wild at other places, mostly as an escape from cultivation by dispersal of their seeds. Such trees include: **Acacia nilotica**, **Azadirachta indica**, **Bombax ceiba**, **Chukrasia tabularis**, **Dalbergia sissoo**, **Ficus benghalensis**, **Ficus religiosa**, **Melia azedarach** and **Zizyphus mauritiana**.

(B) **SHRUBS AND WOODY (SHRUBBY) CLIMBERS (35)**

A total of 36 species of shrubs (including shrub-like, small sized trees) and woody (shrubby) climbers of medicinal importance have been observed to grow in the area. Of these 31 species are shrubs while 5 species include shrubby climbers.
(i) **Shrubs (30)**


(ii) **Woody (shrubby) climbers (5)**

Many climbers are cultivated for their ornamental value in private and public gardens while a few grow in the wild. A total of 5 species of woody (shrubby climbers) have been recorded from the Amritsar district. Of these, 4 species are cultivated (marked with an asterisk in the following list) while the remaining 1 species grows wild *Asparagus racemosus, *Jasminum grandiflorum, *Jasminum sambac, Tinospora cordifolia and *Vitis vinifera.

(C) **UNDERSHRUBS, HERBS AND HERBACEOUS CLIMBERS (103)**

A large number of undershrubs, herbs, herbaceous climbers, twiners, stragglers and ramblers grow wild in the Amritsar district, mostly during the monsoon and post-monsoon months, normally in hedges or among the roadside vegetation in waste places. Besides, there are some perennial herbaceous climbers also. These include wild as well as cultivated species, many of which are of medicinal importance. A total of 103 species of herbaceous medicinal plants were recorded during the present explorations. These herbs
grow during different seasons of the year as mentioned below. The cultivated species are marked with single asteric (*).

(a) **Medicinal herbs of winter (25)**


(b) **Medicinal herbs of summer (23)**


(c) **Medicinal herbs of rainy season (41)**

Rainy season brings greenery all around, with hundreds of herbaceous plants making their appearance in the waste places, on road sides, in the fields, and among the perennial vegetation. These plants grow as weeds in different habitats and survive for only a few months. A large number of these herbs are of great medicinal importance. If properly collected and processed, these herbs can contribute to the economic kitty of collectors of medicinal herbs and also make available a cheap source of local healthcare system. Following is the list of the medicinal herbs of the rainy season which appear in the area of the present study.

(d) **Medicinal perennial herbs (15)**

A few herbaceous plants are perennials and are, therefore, found all around the year. Most of these perennials are cultivated while a few grow wild. Various perennial herbs are: *Aloe barbadensis, *Bryophyllum pinnatum, *Canna chinensis, *Catharanthus roseus, Cuscuta reflexa, Cynodon dactylon, Cyprus rotundus, *Lantana camara, *Mirabilis jalapa, *Musa paradisiaca, *Nelumbo nucifera, *Ocimum basilicum, *Ocimum sanctum, Imperata cylindrica and *Yucca gloriosa.

From the study it can be concluded that the documentation of medicinal plants of district Amritsar will cater to the need of scholars, teachers and medicine based professionals. There are a large number of medicinal plants growing in Amritsar, which have a potential for commercial exploitation. Although some species (e.g. aloe, amla, aru, bahera, brahmi, garlic, harar, neem, pudina, tulsi, etc.) have found place in commercial formulations, yet there are still many more which have been used by rural vaids, generation after generation, against a variety of ailments with great efficacy but have not been studied for commercial exploitation. Some such unexploited plants, which require further study, on scientific basis for commercial exploitation, have also been explored.