CHAPTER – I

INTRODUCTION

The plant kingdom is a virtual goldmine of potential drug targets and other active molecules awaiting to be discovered. During the last decade, use of traditional medicine has expanded globally and gained popularity. Plants are used as medicine since time immemorial. Plant based drugs are having a revived interest now-a-days because of the awareness of the deleterious effects of modern synthetic drugs. Natural products can play a very crucial role in the pharmaceutical industry as drug themselves or as drug carrier or bioenhancers or excipients.

It has been estimated that only 10-15% of the around 7,50,000 existing species of higher plants have been surveyed for biologically active compounds. Modern herbal research is focused mainly on an activity guided isolation or bioassay of the phytoconstituents from crude drugs. Analytical methods such as TLC, GC, HPLC, HPTLC and the like are utilized in a very dependable manner to evaluate the quality of raw materials, inprocess quality control and quality control of finished products. These instruments would help to better evaluate and validate the whole process of standardisation of traditional herbal drugs.

Scientific studies on a good number of medicinal plants, indicate that promising herbal drugs can be developed for many health problems. Examples include drugs such as morphine, ephedrine and quinine that have been in
widespread use for a long time and more recently adopted compounds such as artemisinin for malaria. Botanicals have been used for medicinal purposes since the dawn of civilization (Grigg B, 1981). It is well documented (Grover et al, 2002) that many pharmaceuticals used today are structurally derived from natural compounds found in traditional medicinal plants. The development of antihyperglycemic drug metformin can be traced to the traditional use of *Galega officinalis* to treat diabetes, and subsequent search to identify active compounds with reduced toxicity (Bailey & Turner, 1996).

Diabetes mellitus is a disorder characterized by abnormalities in the metabolism of carbohydrates, proteins and lipids as consequences of deficiency in the synthesis, secretion or function of insulin. It is recognized as one of the leading causes of death and disabilities. Diabetes is the most common metabolic disorder in our Indian community. It is a silent disease that becomes more prevalent with increasing age. Despite advances in understanding of the disease and management, the morbidity and mortality due to the disease is increasing. Conventional therapeutic agents used for the therapy of diabetes produce lot of adverse effects. The drugs of natural origin have stood the test of time for their safety, efficacy, cultural acceptability and lesser side effects.

An ideal antidiabetic herbal drug, acceptable by the modern medical sciences is yet to be commercially formulated, even though many drugs of natural origin have been acclaimed for their antidiabetic therapeutic properties in the traditional systems of medicine. In light of the present knowledge and experience, a random selection and testing of plants and processing them into formulations and screening them for antidiabetic activity will prove to be of great value in attempts to discover new plant products in the treatment of diabetes.

Hence the present study aims at systematically and scientifically
studying selected traditional formulations used in the treatment of diabetes and to bring out a clinically effective, standardized and safe oral antidiabetic polyherbal formulation.

**AIM AND SCOPE OF THE WORK**

1. To carry out an ethnomedical survey, of the traditional Indian systems of medicine formulations, used in the treatment of diabetes mellitus, in and around Pondicherry.

2. To select scientifically unexplored reputed antidiabetic formulations for the present study based on the above survey and with the help of literature survey.

3. To prepare the selected formulations as per the authentic text after confirming the identity of the raw materials.

4. To subject the formulations to preliminary pharmacological screening for antidiabetic activity.

5. To standardize the formulations using analytical pharmacognostic methods.

6. To study the medicinal properties attributed to the formulations using advanced established animal models for Type 2 diabetes mellitus.

7. To systematically carry out the toxicological studies.

8. To screen the formulations for its antioxidant and anti-lipid per
oxidation activity.

9. To carry out the clinical evaluation of the selected formulations in Type II diabetes mellitus.