CHAPTER 1

INTRODUCTION

“He who plants a garden, plants happiness and wealth”

1.1 GENERAL

Over the past decade, herbal medicine has become a topic of global importance, making an impact on both world health and international trade. Medicinal plants continue to play a central role in the healthcare system of large proportions of the world’s population [1]. The history reveals that medicinal plants have traditionally served as man’s most important weapon against pathogens. People use traditional, natural remedies for curing different types of disease and even in the next millennium the herbal medical practice will forge as important remedy to treat various disorders. This is particularly true in developing countries, where herbal medicine has a long and uninterrupted history of use. Recognition and development of the medicinal and economic benefits of these plants are on the increase in both developing and industrialized nations [2]. Continuous usage of herbal medicine by a large proportion of the population in the developing countries is largely due to the fact that herbal medicines are more acceptable in these countries from their cultural and spiritual points of view and the high cost of Western pharmaceuticals and healthcare [3].

Medicinal plants are treated as a subject of serious study and are undergoing intense research all over the world. India is known as the
emporium of medicinal plants due to the occurrence of several thousands of medicinal plants in the different bioclimatic zones. In India, the use of different parts of several medicinal plants to cure specific ailments has been in vogue from ancient times.

The Ayurveda and Siddha system of medicines are the traditional heritage of India which has been in existence for several centuries which cater to the needs of nearly seventy percent of our population residing in villages. These systems include many time tested medicinal plants or drugs for various diseases and to which there is no answer in modern medicine till today.

Age-old traditions utilized plants and animals either in their native form or their crude extracts for various therapeutic effects. Even though many modern medicines are either derived or modeled based on compounds found in nature, the use of natural drugs has declined in last three decades. The current trend is witnessing a rapid change in this scenario where for a variety of reasons more individuals nowadays prefer to take personal control over their health with the use of herbal medicines, not only in the prevention of diseases but also to treat them. This is particularly true for a wide variety of illness readily treated at home (common cold etc..)[4]. Herbal products are also commonly used by patients with certain chronic medical conditions including breast cancer (12%), liver disease (21%), human immunodeficiency virus (22%), asthma (24%), and rheumatological disorders (26%). Even as we commence the new century with its exciting prospect of gene therapy, herbal medicines remain as one of the common forms of therapy available to the world population [5].

Herbal based medicines do have advantages over chemical compounds. Active constituents in plants are always biologically balanced, affect the human organism in a complex manner, do not usually accumulate in the body and are capable of neutralizing the harmful effects of chemical
compounds. It is also noteworthy that some of the most important drugs of past 50 years or so, which have revolutionized modern medical practices, have almost all first been isolated from plants. These wonder drugs include curare alkaloids, penicillin, vincleucoblastin, podophyllotoxin, atropine, digitoxin, stropanthidin and other new therapeutic agents. Natural products may also be used as building blocks for the synthesis of semi synthetic drugs like plant saponins which can be extracted and easily altered chemicals to produce sapogenins for the manufacture of steroidal drugs[6].

1.2 IMPORTANCE OF NATURAL PRODUCTS

1. They provide a number of extremely useful drugs that are difficult to produce commercially by synthetic means (e.g. Ergot, Digitalis).

2. Natural resources also supply basic compounds that may be modified slightly to render them more effective or less toxic.

3. Natural products are used as prototypes or models for synthetic drugs possessing physiological activities similar to the original drug [7].

4. As a source of new lead compounds of novel chemical structure.

1.3 CURRENT PROBLEMS FACED BY HERBAL MEDICINE

India is sitting on a gold mine of well-recorded and well practiced knowledge of traditional herbal medicine. Unlike China, India has not been able to capitalize on this herbal wealth by promoting its use in the developed world despite their renewed interest in herbal medicines. This can be achieved by judicious product identification based on diseases found in the developed world for which no medicine or only palliative therapy is available; such
herbal medicines will find speedy access into those countries. Strategically, India should enter through those plant-based medicines which are already well accepted in Europe, USA and Japan. Simultaneously, it should identify those herbs (medicinal plants) which are time-tested and dispensed all over India. The basic requirements for gaining entry into developed countries include: (i) well-documented traditional use (ii) single plant medicines (iii) medicinal plants free from pesticides, heavy metals etc., (iv) standardization based on chemical and activity profile (v) safety and stability. However, mode of action studies in animals and efficacy in human will also be supportive. Such scientifically generated data will project herbal medicine in a proper perspective and help in sustained global market [8].

1.4 HERBAL MEDICINE SCENARIO IN INDIA

Ours is a vast country where wide variations in climate, soil, altitude and latitude are available. Nature is bestowed on us a very rich botanical wealth and a large number of diverse types of plants growing wild in different parts of the country. The people of India had an incredible knowledge of phytomedicine driven apparently by the tremendous passion for the study and use of medicinal plants. Indians have thus produced one of the world’s richest medicinal plant heritage.

The Western Ghats have been designated as one of the hot spots of global biodiversity. A rich depository of flora with high endemism is found in the Himalayas. The immense taxonomic diversity of the country throws a challenge to the Indian chemists and biologist to transform the enormous bio-resource into economic wealth and intellectual property. The state Tamil Nadu is endowed with a very rich flora due to the various physiographic features and physiognomic factors, different types of vegetation exist in the state. A total of 5640 species of the flowering plants (including 6 gymnosperms) are reported either naturally occurring or cultivated in the state
Out of this 1474 have been reported to be medicinal plants. However, our knowledge of medicinal plants has mostly been inherited traditionally.

Use of plants for curing various ailments is not confined to the doctors only but is known to several households as well. The use of bioactive plant derived compounds is on the rise in the world because natural remedies are somehow safer and more efficacious than the remedies that are pharmaceutically derived which are more dangerous than the diseases [10, 11]. On the contrary the plant derived medicines are based upon the premise that they contain natural substance that can promote health and alleviated illness. So a retrospection of the healing power of the plants and the return to natural remedies is an absolute need of our time. However a detailed investigation and documentation of plants used in local health traditions and ethno pharmacological evaluation to verify their efficacy and safety is very essential which can lead to the development of new valuable herbal drug for the treatment of various diseases. In view of the widespread interest on Symplocaceae family the present work has been undertaken for the investigation.

Symplocaceae is the botanical name of a family of plants belonging to the order Ericales, includes a single genus Symplocos with about 250 species native to Asia, Australia and America. The genus Symplocos comprises of 300-500 species of the Symplocaceae family. They are trees and shrubs which are traditionally used for the treatment of diarrhoea, dysentery, eye diseases, haemorrhagic gingivitis, uterine disorders, menorrhagia[12], bowel complaints, ulcers[13], snake bites, malaria, tumefaction and enteritis[14]. Previous phytochemical studies on this genus have yielded many kinds of chemicals such as triterpenoids, flavonoids, lignans, phenols, steroids, alkaloids and iridoids. Recently much attention has been paid to Symplocos species due to their diverse biological activities,
particularly anti HIV activity, inhibitory activities against phosphodiesterase and anti tumor applications [15].

Among the Symplocos species *Symplocos cochinchinensis* (Lour.) S.Moore ssp. *laurina* (Retz.) Nooteb. is an important plant which has been considered as a very useful drug in therapeutical aspect even from the ancient periods. It is used traditionally to treat various ailments like tumors, dyspepsia, diarrhoea, liver complaints, leprosy, inflammation, snake bites, asthma, skin diseases and in female disorders[16]. In order to scientifically evaluate the folklore claims this plant has been selected for the present investigation in view of its therapeutic activities.