INTRODUCTION

1.1 GENERAL INTRODUCTION

Man has been using herbs and plant products for combating diseases since time immemorial. Plants not only fulfill the need of diet and drugs it also affects different facets of life such as cultural, economical, medicinal and spiritual. The Indian subcontinent is enriched by variety of flora both aromatic and medicinal. This is due to wide diversity in climatic condition ranging from deserts to swamp lands. Hence our country occupies the top position in the use of herbal drugs.

Plants have played a major role as the basic source in several key industries, thus being responsible for stabilizing and enhancing economy of developing countries. The world health organization is now actively encouraging developing countries to use herbal medicines. They have identified 3000 plants from forest of India and other tropical countries which can be used as medicine. In early stages, the science of medicine developed around those plants which only had curative properties. A continued search for medicinal plants during the last several centuries has given rise to a long list of plants which are of great use in the treatment of disease and for promoting health.

1.1.1 NEED OF HERBAL MEDICINE

Traditional medicine has served as a source of alternative medicine, new pharmaceuticals and healthcare products. Medicinal plants are important for pharmacological research and drug development, not only when plant constituents are used directly as therapeutic agents, but also as starting material for synthesis of drugs or models for pharmacologically active compounds. Most of the synthetic drugs being beyond the reach of the common man of mass population; as against proven safety, histolic approach, acceptability, easy availability and affordable cost of the herbal drugs.

Medicinal plants have wide variety of active chemical constituents such as alkaloids, glycosides, saponins, tannins, mucilage, flavanoids, etc. The chemical constituent present in them are a part of the physiological functions of living flora and hence they are believed to have better compatibility with the human body.
The advancement in the field of herbal drug delivery started recently with the aim to manage human diseases efficiently. Now-a-days extensive research in novel drug delivery systems is going on to improve the therapeutic efficacy of the existing natural molecules. Toxicity and limited absorption of different phytoconstituents are crucial problems in exploring their real potentials against different diseases. Another cause of concern is drug degradation and herbal bioavailability. Hence, extensive research in the field of Herbal Drug Delivery System as a means of improving the therapeutic indices of drugs is inevitable.

Novel drug delivery systems have some inherent advantages over the conventional dosage forms. They are controlled drug delivery system, biodegradable and non-toxic, carry both water and oil soluble payloads. They also undergo controlled hydration and thus sustain the drug release. Colloidal drug carrier systems such as micellar solutions, vesicle and liquid crystal dispersions, as well as nanoparticle dispersions consisting of small particles of 10–400 nm diameter show great promise as drug delivery systems. Among these delivery systems, liposomal drug delivery system seems to be more important. Phospholipids with their wonderful and well-known solubilizing property, solubilizes the water-insoluble compounds. With the help of this property, a noteworthy improvement has been done in the delivery of herbal drugs.

Different phytomolecules like flavonoids, carotenoids, terpenoids are known to possess a number of pharmacological properties like anti-inflammatory, hepatoprotective, peripheral vasodilator, platelet antiaggregating, antioxidant and free radical scavenging activity. However, a severe limitation exists and is imputable to the poor or very poor absorption of these active constituents. For example, in case of flavonoids the reasons for this poor absorption is partly due to bacterial degradation of the phenol moiety of the molecule and a complex formation with other substances present in the gastrointestinal tract thus preventing them from being absorbed. The effectiveness of any herbal product is dependent upon delivering an effective level of the active compounds.

A Phytosome complex is a delivery system composed by a natural active ingredient and a phospholipid. It improves absorption and consequently, bioavailability of active ingredients. In both oral and topical tests, the Phytosome complex has demonstrated a higher biological activity compared to an equal amount of the active ingredient or extract not made in the
phytosome form. The Phytosome complexes are structures in which a poorly water soluble or polar active ingredient is anchored to the polar head of the phospholipid and becomes an integral part of the micellar membrane, unlike liposomes, in which the active ingredient is generally contained inside the micelle structure consisting of phospholipids. Phytosome complexes can be formulated both orally and topically.\textsuperscript{6,7}

The phytosome process has been applied successfully to many popular herbal extracts including \textit{Ginkgo biloba}, grape seed, hawthorn, milk thistle (\textit{Silybum marianum}), green tea (\textit{Thea sinensis}) and ginseng (\textit{Panax ginseng}). The flavonoids and terpenoids components of these herbal extracts are able to directly bind to phosphatidylcholine.\textsuperscript{7,8}