PREFACE

In recent researches, nanosized drug delivery system plays a vital role in enhancement of bioavailability and therapeutic response. Many types of nanosized drug delivery carriers are there like, nanocapsules, nanospheres, nanosponge, nanobead and lipid nanocarriers like Solid Lipid Nanoparticles (SLN). Eventhough, there was a lack of drug encapsulation and loading efficiency in above type of nanoparticles because they behave as an individual particles. In this project Nanostructured Lipid Carrier (NLC) was selected as drug delivery carrier because it will overcome the drawbacks, which means it has high encapsulation efficiency and drug loading efficiency, due to their chain like or blocks like nanostructure.

NLC loaded transdermal drug delivery system is a novel dosage form to enhance the bioavailability of drugs by controlling the release of the drug for prolonged period of time. The NLC carrier will promote the permeation of drug through skin stratum corneum to reach the systemic circulation. The drug rate which controls the process from transdermal patch through the skin and from NLC carrier to systemic circulation may maintain the plasma drug concentration for more than a day with a single dose by reducing the toxicity drug concentration.

The present thesis is divided into seven chapters as follows.

Chapter 1 Illustration of introduction to NLC incorporated transdermal patches, rationale of dosage form, ideal characteristics, advantages, disadvantages, techniques for NLC formulation and fabrication into the patch, characterization of NLC and Patch.

Chapter 2 Illustration of literature survey of NLC formulation and evaluation techniques, optimization techniques used for formulating this dosage form, in-vitro release studies and in-vivo Pharmacodynamic models.

Chapter 3 Illustration of theoretical analysis that includes the aim and objectives, plan of work, drug and excipients profile used in research.
Chapter 4 Illustration of experimental investigations that include materials and methods for formulating the NLC of the drugs (Simvastatin and Carvedilol) and formulating selected optimized NLC into transdermal patches, physical evaluation, in-vitro evaluation and in-vivo Pharmacodynamic parameters.

Chapter 5 Illustration of experimental results and discussion of results according to the objective of research.

Chapter 6 Highlights of the summary, conclusion and future recommendations.