This thesis consists of three parts in addition to references, arabic and english summaries. Each part includes an introduction, literature review, descriptive experimental work for the studied drugs, results, discussion and ends with a conclusion.

Part I: Quantitative determination of nifuroxazide and its genotoxic impurities. This part includes: Section (A): Introduction and Literature Review, Section (B): Synthesis and Structural Elucidation of Nifuroxazide Impurities, Section (C) : Determination of Nifuroxazide and Its Genotoxic Impurities by Different Multivariate Calibration Methods, and Section (D): Determination of Nifuroxazide and Its Genotoxic Impurities by Different Chromatographic Methods.

Part II: In vivo determination of thalidomide and its co-administered drug (dexamethasone): studying of their pharmacokinetic behavior. This part includes: Section (A): Introduction and Literature Review, and Section (B): Determination of Thalidomide and Dexamethasone by Different Chromatographic Methods and Investigation of Their Pharmacokinetic Parameters.

Part III: Quantitative determination of bisoprolol fumarate and rosuvastatin calcium in their binary mixture.This part includes :Section (A): Introduction and Literature Review, Section B: Determination of Bisoprolol Fumarate and Rosuvastatin Calcium by Different Spectrophotometric Methods, Section (C): Determination of Bisoprolol Fumarate and Rosuvastatin Calcium by Spectrofluorimetric Method, and Section (D): Determination of Bisoprolol Fumarate and Rosuvastatin Calcium by TLC-Densitometric Method