

The vast literature was envisaged before the finalization of the research aim and objectives. The specific aim of this research work was to investigate the effect of natural bioenhancers on the bioavailability of poorly bioavailable anti-viral drugs. Drug of choices were Acyclovir, Saquinavir. Natural bioenhancers used were Quercetin, Silibinin & Luteolin. In the proposed research work acyclovir and saquinavir were combined with three different bioenhancers to enhance the oral uptake of the drugs, thereby improving the bioavailability as well therapeutic efficacy.

2.1. Aims and Objectives

- Study the effect of quercetin (QU), silibinin (Sil) and luteolin (LT) on acyclovir (ACV) and Saquinavir (SQU) oral uptake enhancement
 - ❖ Drug-bioenhancer compatibility study
 - ❖ Selection/development/optimization and validation of analytical and bio-analytical method for the determination of ACV & SQU in permeation, cell lines and plasma samples.
 - ❖ Preparation of binary combination of ACV & SQU and various proportions of bioenhancer using physical mixing.
 - ❖ To investigate *ex-vivo* permeation pattern of ACV & SQU in presence of bioenhancers in binary systems.
 - ❖ Optimization of proposed binary mixture through determination of permeation coefficient of ACV & SQU using *In-vitro* Caco-2 cell line studies.
 - ❖ *In-vivo* studies for optimized binary mixtures in rabbits as an animal model.
 - ❖ Conclusion on the basis of experimental protocols used.