Summary and Conclusions

Chapter – 6
The present study was an attempt to design, develop and evaluate a suitable hydrodynamically balanced system (HBS) in the form of a single unit-floating capsule for local delivery of amoxycillin and bioavailability enhancement of metformin and celecoxib. Low density polymers were selected for the formulation on the basis of desirable buoyancy and the drug release properties.

Following conclusions can be drawn from the results obtained:

- Gastroretentive formulations in the form of HBS capsules were developed.
- HBS capsules of amoxycillin, metformin and celecoxib were developed to a satisfactory level in terms of floatability and release.
- Satisfactory in vitro release was achieved over a period of 12 h.
- Stability studies on the formulation revealed a low value of degradation rate constant and confirmed that the formulations were stable.
- A method of radiolabeling Metformin and Celecoxib using Tc99m was developed and standardized.
- Gamma Scintigraphy studies were performed on optimized formulations of metformin and celecoxib; the formulations were found to retain in the stomach for a period of 5 h of study.
Pharmacokinetic parameters were assessed using Gamma Counter and there was an increase in the extent of absorption in case of optimized HBS capsules for metformin and celecoxib when compared with conventional formulations of the drug.

It was concluded from the experimental studies and observations that the gastroretention by the virtue of floatation has been achieved successfully by delivery of drug to stomach for local delivery and proximal small intestines for bioavailability enhancement as compared to conventional system.