CHAPTER VIII
CONCLUSION

Changes in the micromolar ratios of nonionic surfactants with a constant ratio of cholesterol are associated with changes in the entrapment and release of zidovudine from Tween 80 niosomes. Zidovudine niosomes formulated with Tween 80 entrapped high amounts of drug and the addition of DCP sustained the drug release for a longer time. The present study clearly shows that niosomes are capable of encapsulating AZT and that the AZT vesicles that are formed are of a nanoscale size suitable for i.v. injection. In vivo disposition studies indicate that niosomes, like liposomes, are efficiently taken up by macrophages of the RES in liver and spleen. Differences in recognition of Tween 80 niosomal formulation with and without DCP were noted between phagocytes of liver and spleen. Like liposomes, recognition of niosomes by macrophages is likely to be influenced by the effect of blood proteins adsorbed on the surface of niosomes. Negatively charged Tween 80 niosomes undergo rapid in vivo clearance.

Further studies also led to some interesting findings which reveal that niosome vesicles without charge and with an average mean diameter of 137 nm are recognized by the phagocytic cells of the RES which help in the selective uptake of the anti-HIV drug AZT by macrophages. It was found that adding 20 µM cholesterol to the niosome formulations promoted the uptake of AZT by macrophages present in the liver and spleen of RES. Proniosomes undergo rapid clearance and are not recognized by macrophages. From these observations, we are confident that niosomes will prove their place by enhancing the effectiveness anti-HIV drug at lower doses. However, the formulations developed in this study need to be evaluated in clinical trials on humans with emphasis on pathophysiological alterations during the disease state.

193

Formulation Development and In vivo Evaluation of Zidovudine Niosomes
The following trials could be attempted further in future on these zidovudine niosomes.

- The anti HIV activity of zidovudine niosomes could be tested in cell lines.
- Attempt towards clinical trial for zidovudine niosomes could be carried out.
- Development of niosome formulation with combination of antiretroviral drugs.
- Proniosome formulation approach using macrophage receptor specific carriers could be attempted.