## List of Figures:

	Figure	Description	Page
	Figure 2.1:	Generic phase diagram of surfactant-oil-water mixture showing	7
		the possible aggregates.	
	Figure 2.2:	The structure of micelles. M= Micelles for o/w microemulsion,	17
		RM= Reverse micelles for w/o microemulsion	
:	Figure 2.3.:	The lamellae (L) and the spherulite (S) structures. The surfactant	18
		molecules in the spherulite are arranged as onion layers	
	Figure 2.4:	Bicontinuous structure. The "pipeline" forms an oil continuous	18
		phase and the exterior forms a water continuous phase	
	Figure 2.5.:	Possible microemulsion structures: a) Vesicles (adopted from ref.	19
		10) b) interconnected rod-like micelles	
	Figure 2.6	Microemulsion base lecithin gels: (a) Schematic representation of	19
-		the formation of lecithin gels upon addition of water to small	
		phosphatidylcholine reverse micelles in apolar solvent. (b)	
	· ]	Localisation of solubilised 'guest' molecules within lecithin gels.	
		Lipophilic drug (stripped bar); hydrophilic drug (black circle) and	
		ampiphillic drug (shaded head with attached tail)	
	Figure 2.7.:	A steric model correlating the shape of ampiphile to the	26
		spontaneous curvature of the interface. (Gennes, D et al., 1982)	
	Figure 2.8.:	Winsor Type I, Type II and Type III microemulsion	31
	Figure 3.1	Absorptivity scans of acyclovir in 0.1 N HCl	103
	Figure 3.2	Calibration curve of acyclovir in 0.1N HCl.	104
	Figure 3.3	Absorptivity scan of acyclovir in ethanol	106
	Figure 3.4	Calibration curve for the estimation of acyclovir	106
	Figure 3.5	Absorptivity scan of acyclovir in PBS pH 7.4	108
	Figure 3.6	Calibration curve for the estimation of acyclovir.	108
	Figure 3.7	Absorptivity scan of efavirenz in methanol	113
	Figure 3.8	Calibration curve for the estimation of efavirenz	114
	Figure 3.9	Absorptivity scan of efavirenz in 1% SLS	116

Figure 3.10	Calibration curve for the estimation of efavirenz.	116
Figure 3.11	Calibration curve of efavirenz in standard solution	118
Figure 3.12	Calibration curve of efavirenz in rat plasma	120
Figure 3.13	Blank rat plasma peak for estimation of acyclovir in rat plasma	124
Figure 3.14	Acyclovir peak in water.	124
Figure 3.15	Acyclovir peak in rat blood plasma.	125
Figure 3.16	Calibration of acyclovir in rat plasma	126
Figure 3.17	Blank rat plasma peak for estimation of efavirenz in plasma	130
Figure 3.18	Efavirenz peak in mobile phase	130
Figure 3.19	Efavirenz peak in rat blood plasma.	130
Figure 4.1	Effect on interfacial tension (IFT) of oil in presence of ST, COST	146
	and ST+ COST mixture (System A)	
Figure 4.2	Effect on interfacial tension (IFT) of oil in presence of ST, COST	148
	and ST+ COST mixture (System B)	
Figure 4.3	Effect on interfacial tension (IFT) of oil in presence of ST, COST	150
	and ST+ COST mixture (System C)	
Figure 4.4	Effect on interfacial tension (IFT) of oil in presence of ST, COST	152
	and ST+ COST mixture (System D)	
Figure 4.5:	Pseudo-ternary phase diagram of labrasol, plurol olique, labrafac	159
;	and water system (Km=4:1)	
Figure 4.6	Pseudo-ternary phase diagram of labrasol, plurol olique, labrafac	160
	and water system (Km=3:1)	
Figure 4.7	Pseudo-ternary phase diagram of labrasol, plurol olique, labrafac	160
	and water system (Km=2:1)	
Figure 4.8	Pseudo-ternary phase diagram of tween 80, propylene glycol,	161
	labrafac and water system (Km=3:1)	
Figure 4.9	Pseudo-ternary phase diagram of tween 80, propylene glycol,	162
	labrafac and water system (Km=2:1)	
Figure 4.10	Pseudo-ternary phase diagram of tween 80, propylene glycol,	162
	labrafac and water system (Km=1:1)	
Figure 4.11	Pseudo-ternary phase diagram of tween 80, propylene glycol,	163

	labrafac and water system (Km=1:2)	
Figure 4.12	Pseudo-ternary phase diagram of labrasol, transcutol, labrafil M	164
	1944CS and water system (Km=4:1)	
Figure 4.13	Pseudo-ternary phase diagram of labrasol, transcutol, labrafil M	165
	1944CS and water system (Km=3:1)	
Figure 4.14	Pseudo-ternary phase diagram of labrasol, transcutol, labrafil M	165
	1944CS and water system (Km=2:1)	
Figure 4.15	Pseudo-ternary phase diagram of labrasol, transcutol, labrafil M	166
	1944CS and water system (Km=1:1)	
Figure 4.16	Pseudo-ternary phase diagram of Cremophor RH 40, propylene	167
	glycol, labrafil M 1944 CS and water system. (Km=3:1)	
Figure 4.17	Pseudo-ternary phase diagram of Cremophor RH 40, propylene	167
	glycol, labrafil M 1944 CS and water system (Km=2:1)	
Figure 4.18	Pseudo-ternary phase diagram of Cremophor RH 40, propylene	168
• •	glycol, labrafil M 1944 CS and water system (Km=1:1)	
Figure 4.19	Pseudo-ternary phase diagram of Cremophor RH 40, propylene	168
	glycol, labrafil M 1944 CS and water system (Km=1:2)	
Figure 5.1	Electrical conductivity as a function of water content (System A)	189
Figure 5.2	Electrical conductivity as a function of water content (System B)	190
Figure 5.3	Percolation threshold determination of system A (ST/COST	190
	ratio=4:1)	
Figure 5.4	Percolation threshold determination of system A (ST/COST	191
	ratio=3:1)	
Figure 5.5	Percolation threshold determination of system A (ST/COST	191
	ratio=2:1)	
Figure 5.6	Percolation threshold determination of system B at different Km	192
Figure 5.7	Electrical conductivity as a function of water content (System C)	194
Figure 5.8	Percolation threshold determination of system C at different Km	194
Figure 5.9	Electrical conductivity as a function of water content (System D)	195
Figure 5.10	Percolation threshold determination of system D at different Km	196
Figure 5.11	Viscosity changes with increasing water content at different	198

-

- vii -

surfactant to cosurfactant ratio (Km) (system A)

Figure 5.12	Viscosity change with increasing % of aqueous phase (system B)	200
Figure 5.13	Viscosity changes with increasing water content at different	202
	surfactant to cosurfactant ratio (Km) (system C)	
Figure 5.14	Viscosity changes with increasing water content at different	203
	surfactant to cosurfactant ratio (Km) (system D)	
Figure 5.15	Comparative <i>in-vitro</i> diffusion profile of acyclovir through rat	214
	intestine from pure drug, tablet and microemulsion (AMEP)	
Figure 5.16	In-vitro diffusion profile of acyclovir through rat intestine from	216
	microemulsion (BMEP)	
Figure 5.17	In-vitro diffusion profile of acyclovir through rat intestine from	217
	microemulsion (C-MEP)	
Figure 5.18	In-vitro diffusion profile of acyclovir through rat intestine from	219
	microemulsion (D-MEP)	
Figure 5.19	Figure: TEM photograph of system A at Km=4	220
Figure 5.20	Figure: TEM photograph of system B at Km=2	220
Figure 5.21	Figure: TEM photograph of system C at Km=4	221
Figure 5.22	Figure: TEM photograph of system D at Km=2	221
Figure 6.1.:	Flow chart for the preparation of SLN	227
Figure 6.2.:	Response of factors at different level for Acy-SLN	237
Figure 6.3	Response of factors at different level for Efa-SLN	240
Figure 6.4.:	Particle size distribution of the acyclovir SLN (Batch No: ACY-	241
	SLN-opt 04)	
Figure 6.5.:	Particle size distribution of the acyclovir SLN (Batch No: ACY-	242
	SLN-opt- 06)	
Figure 6.6.:	Particle size distribution of the efavirenz SLN (Batch No- Ef-	242
	SLN-opt02)	
Figure 6.7:	Particle size distribution of the efavirenz SLN (Batch No- Ef-	242
	SLN-opt03)	
Figure 6.8.:	DSC thermogram of pure acyclovir	246
Figure 6.9:	DSC thermogram of pure efavirenz	247

- viii -

Figure 6.10:	DSC thermogram lipid (GDS)	247
Figure 6.11:	DSC thermogram of acyclovir loaded SLN	248
Figure 6.12:	DSC thermogram of lipid (GTS)	249
Figure 6.13:	DSC thermogram of efavirenz loaded SLN:	249
Figure 6.14:	Scanning Electron Micrograph of acyclovir loaded SLN (Acy-	251
	SLN-opt)	
Figure 6.15:	Scanning Electron Micrograph of efavirenz loaded SLN.(Efa-	251
	SLN-opt)	
Figure 6.16:	In-vitro diffusion of acyclovir from SLN formulations.	253
Figure 6.17:	Cumulative diffusion of acyclovir from different SLN formulation	254
Figure 6.18:	In-vitro diffusion of efavirenz from different SLN formulations.	256
Figure 6.19:	Cumulative diffusion of efavirenz from different SLN	256
	formulations	
Figure 7.1:	Plasma concentration of acyclovir after i. v. administration	269
Figure 7.2:	Plasma concentration of acyclovir after oral administration	269
Figure 7.3:	Plasma concentration of efavirenz after i.v. administration	272
Figure 7.4:	Plasma concentration of efavirenz after oral administration	273
Figure 8.1.	Kidney from (a) control male rats showing normal morphology of	282
	epithelial cells located in the outer stripe of the outer media (b)	
ţ	rats treated with 20mg/kg/day acyclovir for 15days	
Figure 8.2	Kidney from male rat treated with 20mg/kg/day acyclovir in (a)	282
	microemulsion (ME04) (b) microemulsion (ME11) for 15days	
Figure 8.3	Kidney from male rat treated with 20mg/kg/day acyclovir in SLN	283
	(Acy-SLN-opt) for 15days.	
Figure 8.4	Liver from (a) control male rats showing normal morphology (b)	285
	treated with 20mg/kg/day efavirenz for 15days	
Figure 8.5	Liver from male rat treated with 20mg/kg/day efavirenz in (a)	285
	microemulsion (ME13) (b) microemulsion (ME23) for 15days	
Figure 8.6	Liver from male rat treated with 20mg/kg/day efavirenz in SLN	286
	(Efa-SLN-opt) for 15days	

- ix -