LIST OF TABLES

		Page No
Table 2.1	Small molecules and macromolecules currently being studied	19
	for nasal delivery	
Table 2.2	Pharmacopoeial specifications for chitosan	42
Table 2.3	Typical viscosity (dynamic) values for chitosan 1% w/v	44
	solutions in different acids	
Table 2.4	Pharmacopeial specifications for sodium alginate	47
Table 2.5	Uses of sodium alginate	50
Table 3.1	Calibration data for Carvedilol in pH 6.2 phosphate buffer and	70
	methanol (9:1)	
Table 3.2	Parameters for UV spectrometric method of analysis for	71
	Carvedilol in pH 6.2 phosphate buffer and methanol (9:1)	
Table 3.4	Interday variability of Carvedilol assay in pH 6.2 phosphate	72
	buffer and methanol (9:1) by UV spectroscopy over three	
	consecutive days	
Table 3.5	Calibration data for Carvedilol in methanol and 0.1N HCl (3:2)	73
Table 3.6	Parameters for UV spectrometric method of analysis for	74
	Carvedilol in methanol and 0.1N HCl (3:2).	
Table 3.7	Intraday precision and accuracy for the Carvedilol assay in	74
	methanol and 0.1N HCl (3:2) by UV spectroscopy	
Table 3.8	Interday variability of Carvedilol assay in methanol and 0.1N	75
	HCl (3:2) by UV spectroscopy over three consecutive days	
Table 3.9	Calibration data for Nitrendipine in pH 6.2 phosphate buffer	77
	containing 1% Tween 80	
Table 3.10	Parameters for UV spectrometric method of analysis for	78
	Nitrendipine in pH 6.2 phosphate buffer containing 1% Tween	
	80	
Table 3.11	Intraday precision and accuracy for the Nitrendipine assay in	78
	pH 6.2 phosphate buffer containing 1% Tween 80 by UV	
	spectroscopy	•
Table 3.12	Interday variability of Nitrendipine assay in pH 6.2 phosphate	79
	buffer containing 1% Tween 80 by UV spectroscopy over three	

	consecutive days	
Table 3.13	Calibration data for Nitrendipine in methanol and 0.1N HCl	80
	(3:2)	
Table 3.14	Parameters for UV spectrometric method of analysis for	81
	Nitrendipine in methanol and 0.1N HCl (3:2).	
Table 3.15	Intraday precision and accuracy for the Nitrendipine assay in	81
	methanol and 0.1N HCl (3:2) by UV spectroscopy	
Table 3.16	Interday variability of Nitrendipine assay in methanol and 0.1N	82
	HCl (3:2) by UV spectroscopy over three consecutive days	
Table 4.1	Different batches of chitosan microspheres	87
Table 4.2	Various formulation parameters used in the preparation of	97
	CRV loaded microspheres	
Table 4.3	Characteristics of prepared CRV loaded chitosan microspheres	98
Table 4.4	Constants for Langmuir and Freundlich Equations	104
Table 4.5	Kinetic model of Carvedilol release from chitosan	107
	microspheres	
Table 4.6	Release mechanisms of different formulations	108
Table 4.7	Stability study results for CRV loaded chitosan microspheres	113
	under accelerated condition	
Table 5.1	Factorial design parameters and experimental conditions	119
Table 5.2	Formulation of the microspheres utilizing 2 ³ factorial design	122
Table 5.3	Flow properties of CRV loaded Alginate microspheres	124
Table 5.4	Kinetic model of Carvedilol release from Alginate	130
	microspheres	
Table 5.5	Release kinetics parameters and mechanisms of different	131
	formulations	
Table 5.6	Summary of results of regression analysis for responses Y1 and	132
	Y2	
Table 5.7	Results of analysis of variance for measured response	132
Table 5.8	The predicted and observed response variables of the sodium	141
	alginate microspheres	

Stability study results for CRV loaded Alginate microspheres

under accelerated condition

Table 5.9

145

Table 6.1	Various formulation parameters used in the preparation of	151
	NTD loaded microspheres	
Table 6.2	Characteristics of prepared NTD loaded chitosan microspheres	152
Table 6.3	Constants for Langmuir and Freundlich Equations	159
Table 6.4	Kinetic model of Carvedilol release from chitosan	162
	microspheres	
Table 6.5	Release mechanisms of different formulations	163
Table 6.6	Stability study results for CRV loaded chitosan microspheres	168
	under accelerated condition	
Table 7.1	Factorial design parameters and experimental conditions	173
Table 7.2	Formulation of the microspheres utilizing 2 ³ factorial design	176
Table 7.3	Characteristics of prepared NTD loaded Alginate microspheres	179
Table 7.3	Kinetic model of Nitrendipine release from Alginate	184
	microspheres	
Table 7.4	Release kinetics parameters and mechanisms of different	185
	formulations	
Table 7.5	Summary of results of regression analysis for responses Y1 and	186
	Y2	
Table 7.6	Results of analysis of variance for measured response	186
Table 7.7	The predicted and observed response variables of the sodium	195
	alginate microspheres	
Table 7.8	Stability study results for NTD loaded Alginate microspheres	199
	under accelerated condition	
Table 8.1	Percent of formulation delivered from MIAT® nasal monodose	207
	insufflator with 5 mg loading	
Table 8.2	Percent of formulations delivered from MIAT® nasal	207
	monodose insufflator with 10 mg loading	
Table 8.3	Percent of formulation delivered from MIAT® nasal monodose	208
	insufflator with 20 mg loading	
Table 9.1	Effect of pH on the % radiolabeling efficiency of Microspheres	219
	and Carvedilol	
Table 9.2	Effect of Incubation time on the % radiolabeling efficiency of	219
	Microspheres and Carvedilol	

Table 9.3	Effect of Stannous Chloride Concentration on the %	220
	radiolabeling efficiency of Microspheres and Carvedilol	
Table 9.4	In Vitro Stability of the 99mTc-CRV and 99mTc-Microspheres in	221
	Physiological Saline at 37 ⁰ C	
Table 9.5	In Vitro Stability of the 99mTc-CRV and 99mTc-Microspheres in	221
	Serum at 37 °C	
Table 9.6	Mean blood radioactivity (KCPM/gm) of Carvedilol after IV	222
	and of CHCR and ALCR after Intranasal administration	
Table 9.7	Pharmacokinetic parameters of Carvedilol after IV and of	224
	CHCR and ALCR after Intranasal administration in Rabbits	
Table 9.8	The radioactivity remaining in the rabbit nasal cavity at each	227
	time point after administering chitosan microspheres (CHCR),	
	alginate microspheres (ALCR) and lactose powder (control)	
Table 10.1	Effect of pH on the % radiolabeling efficiency of Microspheres	237
	and Nitrendipine	
Table 10.2	Effect of Incubation time on the % radiolabeling efficiency of	238
	Microspheres and Nitrendipine	
Table 10.3	Effect of Stannous Chloride Concentration on the %	239
	radiolabeling efficiency of Microspheres and Nitrendipine	
Table 10.4	In Vitro Stability of the 99mTc-NTD and 99mTc-Microspheres in	239
·	Physiological Saline at 37 ⁰ C	
Table 10.5	In Vitro Stability of the 99mTc-NTD and 99mTc-Microspheres in	240
	Serum at 37 °C	
Table 10.6	Mean blood radioactivity (KCPM/gm) of Nitrendipine after IV	241
	and of CHNT and ALNT after Intranasal administration	
Table 10.7	Pharmacokinetic parameters of Nitrendipine after IV and of	243
	CHNT and ALNT after Intranasal administration in Rabbits	
Table 10.8	The radioactivity remaining in the rabbit nasal cavity at each	245
	time point after administering chitosan microspheres (CHNT),	
	alginate microspheres (ALNT) and lactose powder (control)	