

LIST OF TABLES

Table no.	Table Title	Page no.
Table 1.1	Examples of marketed SEDDS formulations	4
Table 1.2	Examples of marketed Nanoemulsion formulations	5
Table 2.2.1	Lipid formulation classification system (LFCS)	13
Table 2.2.2	Examples of different triglycerides	15
Table 2.2.3	Examples of Various Surfactants and Cosurfactants/ Cosolvents	18
Table 2.3.1	Review of work done on SMEDDS	24
Table 2.3.2	Review of work done on Nanoemulsions	35
Table 2.5.1	Physicochemical and biopharmaceutical properties of DE	43
Table 2.5.2	Review of work done on DE	45
Table 2.5.3	Physicochemical and biopharmaceutical properties of Nisoldipine	48
Table 2.5.4	Review of work done on Nisoldipine	51
Table 3.4.1	Calibration data for DE in various media	76
Table 3.4.2	Linear regression analysis of calibration data for DE in different media	77
Table 3.4.3	Absorbance data of DE at 0 and 24 h for stability	79
Table 3.4.4	Intraday and interday precision analysis of UV method for DE	82
Table 3.4.5	Standard addition data to measure accuracy of UV method in different media	84
Table 3.4.6	LOD and LOQ calculation from calibration data of DE in different media	85
Table 3.4.7	Specificity and interference study of formulation components for DE	86
Table 3.4.8	Calibration data for estimation of DE by HPLC at 230 nm	89
Table 3.4.9	Accuracy of HPLC method for DE at 230nm	90
Table 3.4.10	Intraday and interday precision analysis of HPLC method	91

Table 3.4.11	Absorbance data of DE at 0 and 24 h for stability	92
Table 3.4.12	LOD and LOQ calculation from calibration curve of DE by HPLC	93
Table 3.4.13	Calibration data for estimation of DE by HPLC in plasma at 230 nm	94
Table 3.4.14	Absorbance data of DE at 0 and 24 h for analytical stability in Plasma using HPLC measured at 230nm	95
Table 3.4.15	Intraday and interday precision analysis of HPLC method in plasma	96
Table 3.4.16	Standard addition data to measure accuracy of HPLC method for DE in plasma	97
Table 3.4.17	LOD and LOQ calculation from calibration curve of DE in plasma by HPLC	97
Table 3.4.18	UV spectrophotometric calibration data for NISO in 0.1N HCl with 0.5% SLS and methanol	99
Table 3.4.19	UV spectrophotometric calibration data for NISO phosphate buffer pH 6.8 with 0.5% SLS and phosphate buffer pH 7.4 with 0.5% SLS	100
Table 3.4.20	Linear regression analysis of calibration data for NISO in different media	101
Table 3.4.21	Absorbance data of NISO at 0 and 24 h for Stability	103
Table 3.4.22	Intraday and interday precision analysis of UV method for NISO	106
Table 3.4.23	Standard addition data to measure accuracy of UV Method for NISO	109
Table 3.4.24	LOD and LOQ calculation from calibration data of NISO in different media	110
Table 3.4.25	Specificity and interference Study of formulation components for NISO	111
Table 3.4.26	Calibration data for NISO by HPLC	113
Table 3.4.27	Standard addition data to measure accuracy of HPLC method for NISO	115
Table 3.4.28	Intraday and Interday Precision Analysis of HPLC Method for NISO	115
Table 3.4.29	Absorbance data of NISO at 0 and 24 h for analytical stability	116
Table 3.4.30	LOD and LOQ calculation from calibration curve of NISO by HPLC	117

Table 3.4.31	Calibration data for NISO in plasma by HPLC	117
Table 3.4.32	Standard addition data to measure accuracy of HPLC method for NISO in plasma	119
Table 3.4.33	Intraday and interday precision analysis of HPLC method for NISO in plasma	119
Table 3.4.34	Absorbance data of NISO at 0 and 24 h for analytical stability in plasma	120
Table 3.4.35	LOD and LOQ calculation from calibration curve of NISO by HPLC in plasma	121
Table 4.1.1	List of Equipments and Instruments	125
Table 4.3.1	Layout of D-optimal design for DE SMEDDS	129
Table 4.3.2	Layout of three level factorial design for NISO SMEDDS	130
Table 4.6.1	Functional groups along with their wave numbers for DE	141
Table 4.6.2	Functional groups along with their wave numbers for NISO	142
Table 4.6.3	Physical compatibility study of DE with excipients	144
Table 4.6.4	Physical compatibility study of NISO with excipients	145
Table 4.7.1	Solubility of DE and NISO in various oils	149
Table 4.7.2	Data for selection of surfactants for DE SMEDDS	150
Table 4.7.3	Data for selection of surfactants for NISO SMEDDS	151
Table 4.7.4	Data for selection of cosurfactants for DE SMEDDS	152
Table 4.7.5	Data for selection of cosurfactants for NISO SMEDDS	152
Table 4.7.6	Results for D-Optimal Design for DE-SMEDDS	156
Table 4.7.7	Model Statistics for Y1 and Y2 responses for DE SMEDDS using D-optimal design	157
Table 4.7.8	Check point analysis with 't' test	159
Table 4.7.9	Results for 3 ² full factorial design for NISO-SMEDDS	160
Table 4.7.10	Results of ANOVA for response surface quadratic model for globule size of NISO SMEDDS	161
Table 4.7.11	Results of ANOVA for response surface quadratic model for % Transmittance of NISO SMEDDS	162
Table 4.7.12	Model Statistics for Y1 and Y2 responses for 3 ² Factorial design of NISO SMEDDS	162

Table 4.7.13	Predicted and experimental responses for check point analysis of NISO SMEDDS with 't' test	166
Table 4.8.1	Effect of dilution and media on globule size and % transmittance of optimized batch of DE-SMEDDS	168
Table 4.8.2	Effect of dilution and media on globule size and % transmittance of optimized batch of NISO-SMEDDS	168
Table 4.8.3	Regression coefficient of various <i>in vitro</i> release models for DE SMEDDS	179
Table 4.8.4	Regression coefficient of various <i>in vitro</i> release models for NISO SMEDDS	183
Table 4.8.5	Results of stability studies for DE SMEDDS	186
Table 4.8.6	Results of stability studies for NISO SMEDDS	187
Table 5.1.1	List of Equipments and Instruments	191
Table 5.4.1.	Parameter range to study the effect of homogenization speed and homogenization time	193
Table 5.5.1	Design layout of 3 ² full factorial design for DE NE	194
Table 5.5.2	Design layout of 3 ² full factorial design for NISO NE	194
Table 5.8.1	Effect of S _{mix} system concentration for DE NE and NISO NE	199
Table 5.9.1	Effect of homogenization speed and homogenization time on globule size and PDI for DE NE pre-emulsion	201
Table 5.9.2	Effect of homogenization speed and homogenization time on globule size and PDI for NISO NE pre-emulsion	202
Table 5.10.1	Design matrix for 3 ² factorial design for DE-NE	203
Table 5.10.2	Results of ANOVA for globule size of DE NE	204
Table 5.10.3	Results of ANOVA for PDI of DE NE	204
Table 5.10.4	Model Statistics for Y1 and Y2 responses for DE NE using 3 ² full factorial design	204
Table 5.10.5	Criteria for selection of desirability of DE NE	207
Table 5.10.6	Predicted and experimental responses for check point batch of DE NE	207
Table 5.10.7	Results for 3 ² factorial design of NISO NE	208
Table 5.10.8	Results of ANOVA for GS of NISO NE	209

Table 5.10.9	Results of ANOVA for PDI of NISO NE	209
Table 5.10.10	Model Statistics for Y1 and Y2 responses for NISO NE using 3 ² full factorial design	210
Table 5.10.11	Predicted and experimental responses for check point analysis of NISO NE	213
Table 5.11.1	Functional groups along with their wave numbers for DE NE	220
Table 5.11.2	Functional groups along with their wave numbers for NISO NE	221
Table 5.11.3	Regression coefficient of various <i>in vitro</i> release models for DE NE	226
Table 5.11.4	Regression coefficient of various <i>in vitro</i> release models for NISO NE	228
Table 5.12.1	Results of stability studies for DE NE	232
Table 5.12.2	Results of stability studies for NISO NE	233
Table 6.3.1	Drug transferred across the Caco-2 cell line for DE SMEDDS, DE NE and DE suspension	248
Table 6.3.2	Drug transferred across the Caco-2 cell line for NISO SMEDDS, NISO NE and NISO suspension	249
Table 6.3.3	Apparent permeability (P _{app}) and enhancement ratio (ER) of DE Suspension, DE SMEDDS, DE NE	249
Table 6.3.4	Apparent permeability (P _{app}) and enhancement ratio (ER) of NISO Suspension, NISO SMEDDS and NISO NE	249
Table 7.2.1	Experimental fructose diet composition to induce hypertension	257
Table 7.3.1	Plasma concentration profiles for orally administered DE formulations in rats	258
Table 7.3.2	Pharmacokinetic parameters of orally administered DE formulations: drug suspension, DE SMEDDS and DE-NE	259
Table 7.3.3	Plasma concentration profiles of orally administered NISO formulations in rats	261
Table 7.3.4	Pharmacokinetic parameters of orally administered NISO formulations: drug suspension, NISO SMEDDS and NISO NE	262
Table 7.3.5	Pharmacokinetic parameters of orally administered DE formulations in CHM treated and Saline treated rats	265
Table 7.3.6	Pharmacokinetic parameters of orally administered NISO formulations in CHM treated and saline treated rats	266