

List of Tables

Table 2-1 Docetaxel profile	21
Table 2-2 Approaches used in the reversal of drug resistant cancer.	24
Table 2-3 Types of lipid polymeric hybrid nanoparticles	31
Table 2-4 Recent literature on development of hybrid nanocarriers.....	34
Table 3-1 List of materials used with their sources.....	55
Table 3-2 List of Equipments Used.....	56
Table 3-3 Process Parameters for estimation of Docetaxel in Acetonitrile: Water (60:40) by HPLC	60
Table 3-4 Calibration data for estimation of Docetaxel in Acetonitrile	67
Table 3-5 Parameters from calibration plot of Docetaxel in Acetonitrile	68
Table 3-6 Accuracy of the method in Acetonitrile.....	69
Table 3-7 Intraday and Interday precision of Docetaxel in Acetonitrile.	69
Table 3-8 LOD and LOQ of Docetaxel in Acetonitrile.....	69
Table 3-9 Calibration data for estimation of Docetaxel in Phosphate buffer 7.4	70
Table 3-10 Parameters from calibration plot of Docetaxel in Phosphate buffer 7.4...	71
Table 3-11 Accuracy of the method in Phosphate buffer 7.4	71
Table 3-12 Intraday and Interday precision of Docetaxel in Phosphate buffer 7.4....	72
Table 3-13 LOD and LOQ of Docetaxel in Phosphate buffer 7.4	72
Table 3-14 Calibration data for estimation of Docetaxel in Phosphate buffer 6.6.....	72
Table 3-15 Parameters from calibration plot of Docetaxel in Phosphate buffer 6.6...	74
Table 3-16 Accuracy of the method in Phosphate buffer 6.6	74
Table 3-17 Intraday and Interday precision of Docetaxel in Phosphate buffer 6.6....	74
Table 3-18 LOD and LOQ of Docetaxel in Phosphate buffer 6.6	74
Table 3-19 Calibration data for estimation of Docetaxel in Acetate buffer 5.5.....	75
Table 3-20 Parameters from calibration plot of Docetaxel in Acetate buffer 5.5.....	76
Table 3-21 Accuracy of the method in Acetate buffer 5.5	76
Table 3-22 Intraday and Interday precision of Docetaxel in Acetate buffer 5.5.....	77
Table 3-23 LOD and LOQ of Docetaxel in Acetate buffer 5.5	77
Table 3-24 RP-HPLC calibration curve values of Docetaxel in Acetonitrile: Water (60: 40)	77
Table 3-25 Parameters from calibration plot of Docetaxel in Acetonitrile: Water (60: 40)	79

Table 3-26 Accuracy of the method in Acetonitrile: Water as mobile phase.....	79
Table 3-27 Intraday and Interday precision of Docetaxel in Acetonitrile: water (60:40) using RP-HPLC.	80
Table 3-28 LOD and LOQ of Docetaxel in Acetonitrile: Water (60: 40)	80
Table 3-29 RP-HPLC calibration curve values of Docetaxel in rat plasma	80
Table 3-30 Parameters from calibration plot of Docetaxel in Rat plasma.....	82
Table 3-31 Accuracy of the method in rat plasma	82
Table 3-32 Intraday and Interday precision of Docetaxel in rat plasma using RP-HPLC.	83
Table 3-33 LOD and LOQ of Docetaxel in Rat plasma	83
Table 3-34 RP-HPLC calibration curve values of Docetaxel in rat lung homogenate	83
Table 3-35 Parameters from calibration plot of Docetaxel in rat lung homogenate ...	85
Table 3-36 Accuracy of the method in rat lung homogenate.....	85
Table 3-37 Intraday and Interday precision of Docetaxel in lung homogenate using RP-HPLC.....	86
Table 3-38 LOD and LOQ of Docetaxel in rat lung homogenate.....	86
Table 3-39 Calibration data for estimation of total phospholipid content.....	86
Table 3-40 Parameters from calibration plot of total phospholipids mixture.....	87
Table 3-41 Accuracy of the method in chloroform.....	88
Table 3-42 Intraday and Interday precision of total lipid mixture in chloroform.	88
Table 3-43 LOD and LOQ of total phospholipids mixture in Chloroform	88
Table 3-44 Change in absorbance of interference Study	89
Table 3-45 Absorbance profile of pDNA	90
Table 3-46 Accuracy of the UV spectrophotometric method.....	91
Table 3-47 Interday and intraday precision of the UV spectrophotometric method...	92
Table 3-48 Relative band density of 200 ng pDNA	93
Table 3-49 Relative band densities at different pDNA concentrations	94
Table 4-1 List of materials	96
Table 4-2 Equipments and Instruments list	96
Table 4-3 Estimation of organoleptic characteristics	98
Table 4-4 Observation of Docetaxel Melting Point by different methods	99
Table 4-5 IR spectrum data of Docetaxel	100
Table 5-1 List of materials used with their sources.....	106

Table 5-2 List of Equipments Used.....	107
Table 5-3 Selection of polymer.....	109
Table 5-4 Effect of polymer concentration on Docetaxel encapsulation	110
Table 5-5 Effect of L/P ratio on Docetaxel encapsulation.....	111
Table 5-6 Effect of drug input on Docetaxel encapsulation	113
Table 5-7 Effect of lipid composition ratio on the complexation efficiency of shRNA and Docetaxel encapsulation	114
Table 5-8 Effect of process parameters on encapsulation of Docetaxel, Complexation of shRNA plasmid and particle size as well as poly dispersity index (PDI).	114
Table 5-9 Variables and levels selected for preliminary study	116
Table 5-10 Design Matrix of Plackett Burman design	117
Table 5-11 ANOVA on factorial model for encapsulation efficiency	118
Table 5-12 ANOVA on factorial model for encapsulation efficiency	119
Table 5-13 Variables and levels selected on the basis of primary design	122
Table 5-14 Design matrix of Box-Behnken design.....	122
Table 5-15 Summary of ANOVA results of different models for Encapsulation efficiency	123
Table 5-16 ANOVA results of quadratic mixture model for encapsulation efficiency	123
Table 5-17 Summary of ANOVA results of different models for particle size.....	132
Table 5-18 ANOVA results of quadratic mixture model for particle size.....	132
Table 5-19 Variables for desirability plot and goals for response	141
Table 5-20 Experimental validation of predicted optimized batch	142
Table 5-21 Amount of 0.2 M NaOH required.....	145
Table 5-22 Total phospholipid content present in optimized batch	149
Table 5-23 Regression coefficient value for all in-vitro release model of Docetaxel	153
Table 5-24 Regression coefficient value for all in-vitro release model of Docetaxel	154
Table 5-25 Residual solvent (acetonitrile) analysis.....	155
Table 6-1 List of Materials	158
Table 6-2 List of Equipments.....	158
Table 6-3 Thermal cycle for freeze drying	159
Table 6-4 Optimization of cryoprotectant	164
Table 6-5 Determination of moisture content of lyophilized samples	165

Table 6-6 Optimization of Dry powder formulation. (Control sample: Ashthalin by Cipla Ltd., India. delivery device: Ciplahaler by Cipla Ltd., India FPF=28.4±1.6; ED=52.1±1.8.)	166
Table 6-7 Evaluation of PLHNC dry powder for inhalation (N=3).....	168
Table 6-8 Relative band density of shRNA pDNA with PLHNCs after Lyophilization and powder processing	172
Table 7-1 List of Materials	174
Table 7-2 List of Instruments.....	175
Table 7-3 Details of primers	186
Table 7-4 RNA to cDNA conversion parameters	187
Table 7-5 Steps of PCR cycle	188
Table 7-6 Reaction parameters for mRNA quantification.....	188
Table 7-7 RT-PCR cycle steps.....	188
Table 7-8 IC ₅₀ (µM) of Various formulation on DR-A549 cell lines	191
Table 7-9 Quantitative estimation of cell migration assay	192
Table 8-1 Results of sighting study for acute toxicity determination	211
Table 8-2 Estimation of oedema index.....	213
Table 8-3 Pulmonary and IV Pharmacokinetic Parameters.....	214
Table 9-1 Stability Testing Data of lyophilized Docetaxel and shRNA pDNA loaded PLHNCs	222
Table 9-2 Stability Testing Data of lyophilized Docetaxel and shRNA pDNA loaded PLHNCs Dry powder formulation.....	223
Table 9-3 Stability of shRNA pDNA	224