
LIST OF TABLES

| Table No. | Title | Page No. |
|------------------|--|-----------------|
| 2.1 | Review of Drug Combinations used in treatment of Cancer | 26 |
| 2.2 | Review of NLCs formulations for treatment of Cancer | 34 |
| 2.3 | Review of Microemulsions formulations for treatment of Cancer | 41 |
| 2.4 | Review of Paclitaxel in treatment of Cancer | 45 |
| 2.5 | Review of Cyclophosphamide in treatment of Cancer | 48 |
| 3.1 | Results of Linearity of Paclitaxel | 71 |
| 3.2 | Results of accuracy and % recovery of Paclitaxel | 73 |
| 3.3 | Results of Repeatability of Paclitaxel | 74 |
| 3.4 | Results of LOD and LOQ of Paclitaxel | 75 |
| 3.5 | Results of Linearity of Cyclophosphamide | 76 |
| 3.6 | Results of accuracy and % recovery of Cyclophosphamide | 78 |
| 3.7 | Results of Repeatability of Cyclophosphamide | 79 |
| 3.8 | Results of LOD and LOQ of Cyclophosphamide | 80 |
| 4.1 | FTIR Spectra Interpretation for Drug-Drug and Drug-Excipient compatibility studies of Paclitaxel | 92 |
| 4.2 | FTIR Spectra Interpretation for Drug-Drug and Drug-Excipient compatibility studies of Cyclophosphamide | 93 |
| 5.1 | QTPP for development of Paclitaxel and Cyclophosphamide loaded NLCs | 105 |
| 5.2 | CQAs for development of Paclitaxel and Cyclophosphamide loaded NLCs | 107 |
| 5.3 | Overview of Risk Ranking System | 110 |
| 5.4 | Initial Risk Assessment | 110 |
| 5.5 | Justification for Initial Risk Assessment | 111 |
| 5.6 | Surfactants, type, HLB value, and maximum allowable concentration | 114 |
| 5.7 | Formulation and Process parameters to be optimized | 115 |
| 5.8 | Parameters and Explanation of SMARTTM Lyophilization Programme | 116 |
| 5.9 | Results of selection of surfactants | 122 |
| 5.10 | Results of optimization of concentration of Soluplus and Cremophor EL | 124 |
| 5.11 | Results of optimization of total lipid concentration | 125 |

| Table No. | Title | Page No. |
|------------------|---|-----------------|
| 5.12 | Results of optimization of solid lipid: liquid lipid ratio | 126 |
| 5.13 | Results of optimization of drug substance concentration | 128 |
| 5.14 | Results of mixing speed | 129 |
| 5.15 | Results of mixing time | 130 |
| 5.16 | Results of temperature of phases | 130 |
| 5.17 | Levels optimized for formulation parameters and process parameters | 132 |
| 5.18 | Finalized formulation composition for NLCs | 132 |
| 5.19 | Compositions containing various cryoprotectants | 133 |
| 5.20 | Results of before and after freeze thaw with different cryoprotectants | 133 |
| 5.21 | Results of Freeze Thaw study with different concentrations of Mannitol | 134 |
| 5.22 | Parameters for SMARTTM Cycle | 137 |
| 5.23 | SMARTTM Lyophilization Cycle (Final Optimized Cycle) | 138 |
| 5.24 | Results of the before vs. after lyophilization and with Mannitol vs. without Mannitol | 139 |
| 5.25 | Characteristic peaks of Paclitaxel and Cyclophosphamide | 144 |
| 5.26 | Regression coefficients for various drug release models | 152 |
| 5.27 | Results of Stability study batch 01 for PAC-CYC NLCs | 154 |
| 5.28 | Updated Risk Assessment | 155 |
| 5.29 | Justification for Initial Risk Assessment | 155 |
| 6.1 | QTPP for development of Paclitaxel and Cyclophosphamide Microemulsion | 181 |
| 6.2 | CQAs for development of Paclitaxel and Cyclophosphamide Microemulsion | 183 |
| 6.3 | Overview of Risk Ranking System | 186 |
| 6.4 | Initial Risk Assessment | 186 |
| 6.5 | Justification for Initial Risk Assessment | 186 |
| 6.6 | Surfactants, type, HLB value, and maximum allowable concentration | 189 |
| 6.7 | Ratio of Surfactants and Co-surfactant | 190 |
| 6.8 | Compositions of Microemulsion for Optimization of Oil and Smix | 191 |
| 6.9 | Process parameters of mixing speed and mixing time | 192 |

| Table No. | Title | Page No. |
|------------------|--|-----------------|
| 6.10 | Results of evaluation of Surfactants on formulation of Microemulsion | 196 |
| 6.11 | Results of evaluation of Soluplus-Cremophor EL combination | 197 |
| 6.12 | Water titration readings for Phase diagram | 198 |
| 6.13 | Results of optimization of drug substance concentration | 200 |
| 6.14 | Trials for optimization of components (Oil and Smix) | 202 |
| 6.15 | Results of mixing speed | 202 |
| 6.16 | Results of mixing time | 203 |
| 6.17 | Optimized Product and Process parameters for PAC-CYC Microemulsion | 204 |
| 6.18 | Results of dilution test of Optimized PAC-CYC Microemulsion | 204 |
| 6.19 | Results of Stability study batch 01 for PAC-CYC microemulsion | 210 |
| 6.20 | Updated Risk Assessment | 211 |
| 6.21 | Justification for Initial Risk Assessment | 211 |
| 7.1 | Results of In-vitro Cytotoxicity study | 234 |
| 7.2 | Results of Cell cycle distribution in MCF-7 cells using Flow cytometry | 240 |